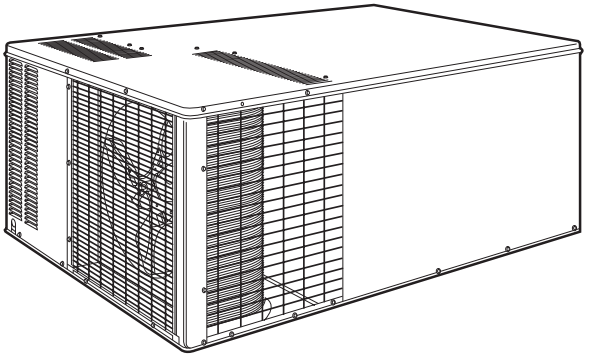
Bryant
Air Conditioning

SINGLE PACKAGE GAS HEATING/ ELECTRIC COOLING UNITS

Model 588A
Sizes 018-060
1½ to 5 Tons



DESCRIPTION

All 588A models feature one piece, compact design and are fully self-contained units that are prewired, prepiped, and precharged for minimum installation expense. Unit is designed for easy use in either downflow (vertical) or horizontal applications.

STANDARD FEATURES

FACTORY-ASSEMBLED PACKAGE is a compact, fully self-contained, gas heating/electric cooling unit that is prewired, prepiped, and precharged for minimum installation expense.

588A units are lightweight and available in a variety of standard heating and cooling sizes with voltage options to meet residential and light commercial requirements. Unit installs easily on a rooftop or a ground-level pad.

CONVERTIBLE DUCT CONFIGURATION on the 588A is designed for easy use in either downflow or horizontal discharge applications.

HIGH-EFFICIENCY DESIGN with SEERs (Seasonal Energy Efficiency Ratios) of 10.0.

DURABLE, DEPENDABLE COMPRESSORS are designed for high efficiency. Each compressor is hermetically sealed against contamination to help promote longer life and dependable operation. Each compressor also has vibration isolation to provide quiet operation. Rotary, reciprocating, or scroll compressors are used. Compressors have internal high-pressure and overcurrent protection.

TOP QUALITY, TOP RELIABILLITY components, designed and treated for a minimum of 15 years of operation under the harshest conditions. Every 588A unit is thoroughly run-tested at the factory in each operating mode, and is evacuated prior to final charging.

DIRECT-DRIVE MULTISPEED, PSC (Permanent Split Capacitor) BLOWER MOTOR is standard on all models.

DIRECT-DRIVE, PSC CONDENSER-FAN MOTOR is designed to help reduce energy consumption and provide for cooling operation down to 40 F.

REFRIGERANT SYSTEM is designed to provide dependability. Liquid refrigerant strainer is used to promote clean, unrestricted operation. Each unit leaves the factory with a full refrigerant charge. Refrigerant service connections make checking operating pressures easier.

EVAPORATOR AND CONDENSER COILS are computer-designed for optimum heat transfer and cooling efficiency. Condenser coil is fabricated of copper tube and aluminum fins and is located inside the unit for protection against damage and for long life and reliable operation. The condenser coil is internally mounted and protected by a composite grille.

Copper fin coils for condenser coil are also available by special order. These coils are recommended in applications where aluminum fins are likely to be damaged due to corrosion. Copper fin coils are ideal for seacoast applications.

DIMPLED HEAT EXCHANGERS optimize heat transfer for improved efficiency. The tubular design permits hot gases to stay in close contact with the cell walls to maximize heat transfer and efficiency.

THE INDUCED DRAFT COMBUSTION SYSTEM eliminates the unsightly appearance of flue stacks, and diminishes the effects of wind on heating operation. The induced draft also prevents contaminants from entering the supply air if a leak in the heat exchanger occurs.

MONOPORT INSHOT BURNERS produce precise air-to-gas mixture, which provides for clean and efficient combustion. The large monoport on the inshot (or injection type) burners seldom, if ever, needs cleaning.

INTEGRATED GAS UNIT CONTROLLER (IGC) contains all the ignition components and is easily accessible for service. The IGC provides built-in diagnostic capabilities. A light-emitting diode (LED) simplifies troubleshooting by providing visual fault notification and system status information. The IGC board provides exclusive anti-short cycle protection for gas heat operation. The IGC also contains burner control logic for dependable heating operation. The 588A units maximize heating efficiency through the IGC's control of evaporator fan ON/OFF delays. The IGC helps make 588A units reliable for many years.

WEATHERIZED CABINETS are constructed of heavy-duty, phosphated, zinc-coated prepainted steel capable of withstanding 500 hours (Federal Test Method Std. No. 141, Method 6061) in salt spray. Interior surfaces of the evaporator compartment are insulated with cleanable foil-faced insulation to help keep the conditioned air from being affected by the outdoor ambient temperature and provide improved air quality. Conforms to American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) No. 62. Sloped condensate pan requires external drain trap.

LOW SOUND RATINGS ensure a quiet indoor and outdoor environment with sound ratings as low as 7.4 bels.

EASY TO SERVICE CABINETS provide easy accessibility to serviceable components during maintenance and installation. Rounded corners are an important safety feature, and a high-quality finish ensures an attractive appearance.

Form No. PDS 588A.18.5B

STANDARD FEATURES (cont)

LOW AND HIGH VOLTAGE ELECTRICAL ENTRIES allow low and high voltage to be brought in either through the duct panel or rear flue panel.

THE STANDARD CONTROL SYSTEM is readily adaptable to all conventional and programmable thermostats. In addition, units are suitable for integration into monitor control systems if required.

STANDARDIZED COMPONENTS for the complete 588A line of products are found in all safety devices, condenser-fan motors, evaporator-fan motors, and control boards, while the gas sections use common inducer motors, limit switches, and roll-out switches. This allows for greater inventory control, familiarity of parts, and fewer stocked parts.

OPTIONAL BASE RAILS provide holes for rigging and forklift handling as well as an elevated mounting frame that provides structural support for horizontal installations. Ideal for light commercial applications.

FACTORY-INSTALLED OPTIONS DESCRIPTION AND USAGE

Unit With Base Rail — Unit has rigging and forklift holes and an elevated mounting frame.

SUGGESTED USE:

- Rigging holes to provide greater ease in handling. Frame to provide elevation and structural support for horizontal applications. Ideal for light commercial applications.

Downflow Option — Unit is shipped from factory configured for downflow application. Unit is equipped with base rail.

SUGGESTED USE:

- To provide easy vertical ductwork connections.

FIELD-INSTALLED ACCESSORIES DESCRIPTION AND USAGE

Roof Curb — Consists of galvanized steel support frame in 8-, 11-, and 14-in. high designs. Provides wood nailer to attach roof counter flashing. Insulated basepans in curbs are provided to prevent condensation. Ductwork attaches to rails provided in the roof curb. A gasket is provided to form an airtight and watertight seal between unit and curb. The roof curb design meets the standards of the NRCA (National Roofing Contractors' Association).

SUGGESTED USE:

- Slab-mounted applications when elevation of the unit above the slab is necessary.
- Rooftop application for downflow discharge.
- Curbs are preassembled and are available for flat roofs.

25% Open Manual Outdoor-Air Damper — Package consists of a manually adjustable damper and includes a rainhood and birdscreen.

SUGGESTED USE:

- To allow a fixed percentage of outdoor air for ventilation under all conditions.
- The damper may be used on either downflow or horizontal airflow applications.

Thermostat and Subbase — These accessories provide cooling and heating control for unit. Autochangeover and manual changeover types are available. Thermostats also available as programmable and non-programmable

SUGGESTED USE:

- To operate and control unit, and to maintain desired building temperature.

The 0° F Low Ambient Kit — Kit permits operation down to 0° F.

SUGGESTED USE:

- When mechanical cooling is required when outdoor-air temperature is between 40 F and 0° F.

Natural-to-Propane Conversion Kit — Kit consists of gas orifices and other hardware required to convert the unit for use with LP (liquid propane). Installation involves changing the gas orifices and adding ceramic baffles to accommodate LP.

SUGGESTED USE:

- When natural gas cannot be obtained and liquid propane is used as fuel.

High Altitude Kit — Kit is available for units installed at 2,001 to 5,000 feet above sea level. Kit consists of natural gas orifices that compensate for gas heat operation at high altitude.

Filter Rack — Rack features easy installation and serviceability for vertical applications.

The filter rack housing is constructed of heavy-gage steel for easy installation.

SUGGESTED USE:

- Kit provides ability to locate filters inside the unit for vertical applications.

Crankcase Heater — Warms crankcase oil to reduce refrigerant migration and ensure proper compressor lubrication.

SUGGESTED USE:

- For use in applications where crankcase is subjected to low outside temperatures. Recommended on 208/230-v, single-phase, 024-042 units only.

Solid-State Time Guard® II Device — Package consists of a control to be field-wired into the unit controls, and provides a 5-minute delay in compressor operation between cooling cycles.

SUGGESTED USE:

- Prevents compressor short cycling when rapid compressor cycles may be a problem.

FIELD-INSTALLED ACCESSORY DESCRIPTION AND USAGE (cont)

Lifting Bracket Kit — Provides attachment point for rigging straps.

SUGGESTED USE:

- When unit needs to be lifted or moved. The kit is not required when unit is equipped with optional base rail or downflow application.

High- and Low-Pressure Switches — Protect the unit from running at unsuitable pressures.

SUGGESTED USE:

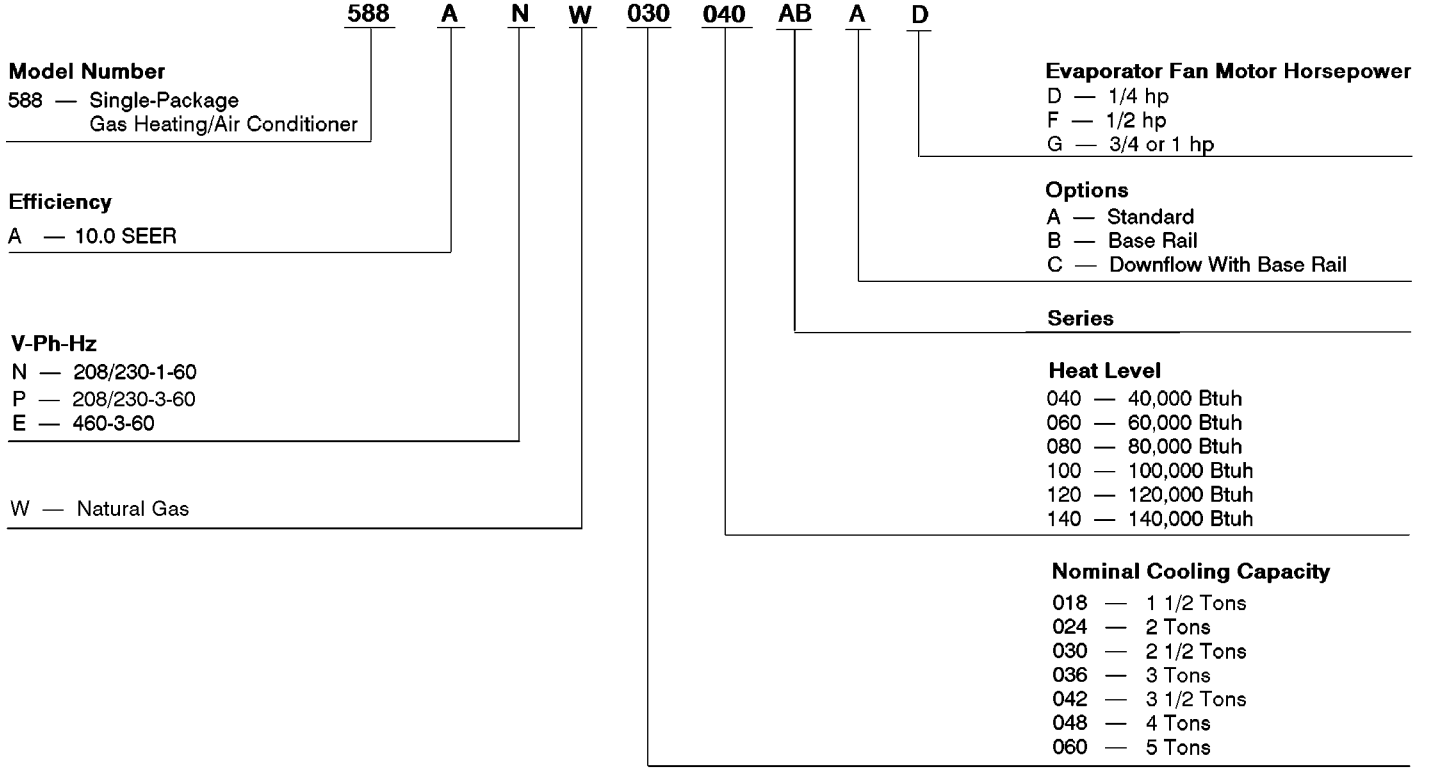
- Provides additional safety features when needed.

CONTENTS

Page

Model Description 3
ARI Cooling Capacities 4
Heating Capacities and Efficiencies 4
Dimensional Drawings 5-10
Specifications 11,12
Selection Procedure 13
Net Cooling Capacities 14-16
Air Delivery 17,18
Electrical Data 20
Operating Sequence 21
Typical Field Wiring 22-24
Typical Installation 25
Application Data 26
Engineers' Specification Guide 26

MODEL DESCRIPTION



SEER — Seasonal Energy Efficiency Ratio

ARI* COOLING CAPACITIES

UNIT 588A	NOMINAL TONS	STANDARD CFM	NET COOLING† CAPACITIES (Btuh)	SEER†**	SOUND RATINGS†† (Bels)
018	1½	600	17,000	10.0	7.4
024	2	800	24,000	10.0	7.6
030	2½	1000	29,200	10.0	8.0
036	3	1200	36,000	10.0	8.0
042	3½	1400	42,500	10.0	8.2
048	4	1600	47,000	10.0	8.2
060	5	1995	59,500	10.0	8.2

LEGEND

Bels — Sound Levels (1 bel = 10 decibels)
db — dry bulb
SEER — Seasonal Energy Efficiency Ratio
wb — wet bulb

*ARI — Air-conditioning and Refrigeration Institute.
†Rated in accordance with U.S. Government DOE (Department of Energy) test procedures and/or ARI Standard 210/240.
**All units have factory-installed time-delay relay.

††Rated in accordance with ARI Standard 270.

NOTE: Capacity ratings are net values, reflecting the effects of circulating fan heat. Ratings are based on 80 F db, 67 F wb indoor entering-air temperature and 95 F db air entering outdoor unit.

OUTDOOR SOUND: ONE-THIRD OCTAVE BAND DATA — DECIBELS

FREQUENCY (Hz)	UNIT 588A						
	018	**024**	**030**	**036**	**042**	**048**	**060**
63	49.8	38.1	45.7	47.8	45.5	56.0	54.3
125	56.5	55.0	58.1	59.3	61.2	65.6	65.1
250	60.3	65.3	68.7	67.4	70.4	71.5	71.5
500	59.8	67.2	64.7	68.8	69.9	71.4	72.7
1000	64.1	68.9	73.0	73.1	76.5	74.2	73.9
2000	64.1	65.5	70.2	69.5	71.3	73.3	73.4
4000	65.2	63.8	68.8	68.2	73.7	69.6	71.7
8000	56.0	60.3	66.6	65.8	65.5	67.1	66.3

HEATING CAPACITIES AND EFFICIENCIES

UNIT 588A	HEATING INPUT (Btuh)	OUTPUT CAPACITY (Btuh)	TEMPERATURE RISE RANGE (°F)	AFUE (%)	CSE (%)
018040	40,000	32,800	20-50	81.0	76.5
024040			20-50	81.0	76.5
030040			20-50	81.0	76.5
024060	60,000	48,600	25-55	81.0	77.5
030060			25-55	81.0	77.5
036060			25-55	81.0	77.5
042060			25-55	81.0	77.5
030080	80,000	64,800	40-70	81.0	77.5
036080			40-70	81.0	77.5
042080			40-70	81.0	77.5
048080			40-70	81.0	77.5
060080			40-70	81.0	77.5
036100	100,000	81,000	50-80	81.0	78.0
042100			50-80	81.0	78.0
048100			50-80	81.0	78.0
060100			50-80	81.0	78.0
036120	120,000	97,200	60-90	80.0	77.5
042120			60-90	80.0	77.5
048120			60-90	80.0	77.5
060120			60-90	80.0	77.5
048140	140,000	113,000	50-80	80.0	77.5
060140			50-80	80.0	77.5

LEGEND

AFUE — Annual Fuel Utilization Efficiency
CSE — California Seasonal Efficiency

NOTE: Before purchasing this appliance, read important energy cost and efficiency information available from your retailer.

DIMENSIONAL DRAWINGS

UNIT	F in./mm	G in./mm	CENTER OF GRAVITY in./mm		
			X	Y	Z
588A018040	16 9/16/420.7	18 15/16/481.0	25.07/637	20.59/523	10.85/276
588A024040			27.07/688	23.35/593	
588A024060			26.98/685	23.27/591	
588A030040			26.71/678	23.46/596	
588A030060/080			27.15/689	22.36/568	
588A036060/080			27.50/698	22.48/571	
588A036100/120			27.40/696	22.44/570	
588A042060/080	20 9/16/522.3	22 15/16/582.6	27.01/686	22.44/570	12.65/321
588A042100/120			26.94/684	22.44/570	

LEGEND

CG — Center of Gravity
COND — Condenser
LV — Low Voltage
MAT'L — Material
NEC — National Electrical Code
REQ'D — Required

NOTES:
1. Clearances must be maintained to prevent recirculation of air from outdoor-fan discharge.
2. Adequate clearance around air openings into combustion chamber must be provided.

REQ'D CLEARANCES FOR SERVICING. in. (mm)

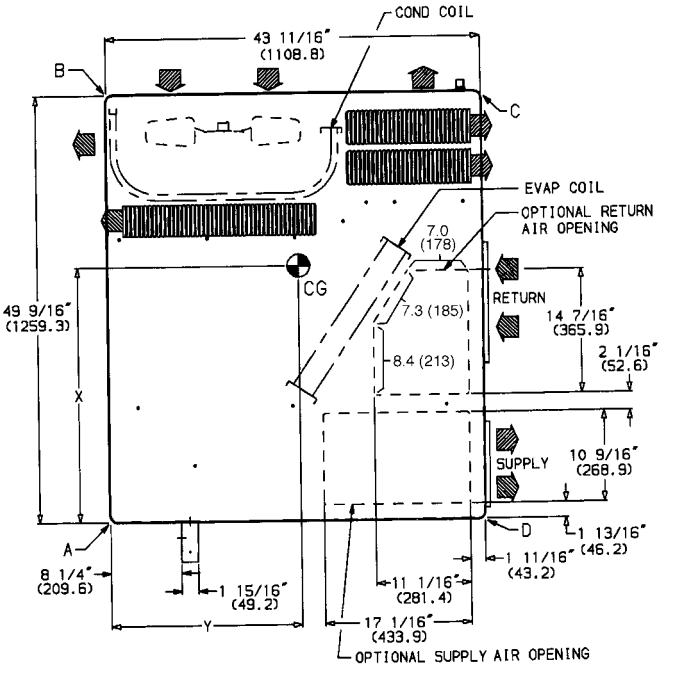
Duct panel 0
Unit top 36 (914)
Side opposite ducts 36 (914)
Compressor access 36 (914)
(Except for NEC requirements)

REQ'D CLEARANCES TO COMBUSTIBLE MAT'L. in. (mm)

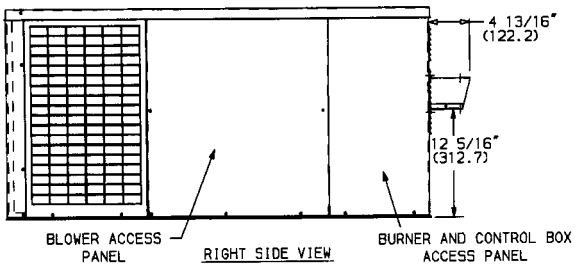
Maximum extension of overhangs 48 (1219)
Unit top 14 (356)
Duct side of unit 2 (51)
Side opposite ducts 14 (356)
Bottom of unit 0
Flue panel 36 (914)

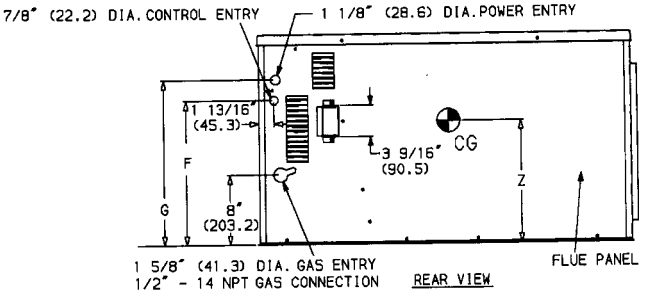
NEC REQ'D CLEARANCES. in. (mm)

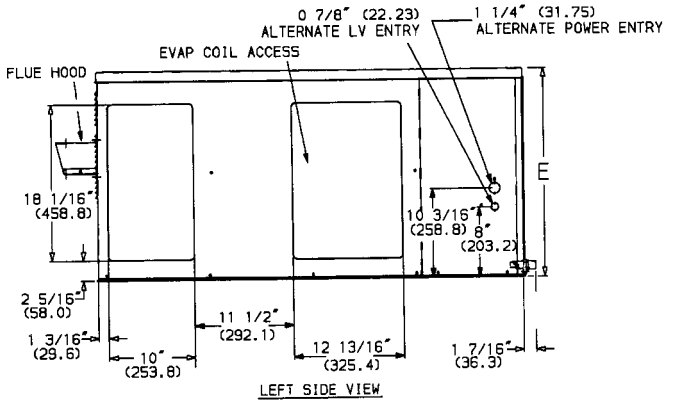
Between units, control box side 42 (1067)
Unit and ungrounded surfaces, control box side 36 (914)
Unit and block or concrete walls and other grounded surfaces, control box side 42 (1067)

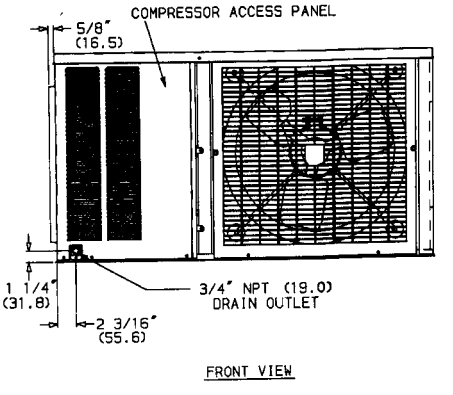


UNIT	ELECTRICAL CHARACTERISTICS	UNIT WEIGHT		CORNER WEIGHT (lb/kg)				UNIT HEIGHT (in./mm)
		lb	kg	A	B	C	D	E
588A018040	208/230-1-60	272	123	81/37	62/28	76/35	53/24	24.1/613
588A024040	208/230-1-60	303	138	97/44	43/20	123/56	40/18	24.1/613
588A024060	208/230-1-60	315	143	100/45	46/21	126/57	43/20	24.1/613
588A030040	208/230-1-60, 208/230-3-60	320	145	100/45	47/21	126/57	47/21	24.1/613
588A030060/080	208/230-1-60, 208/230-3-60	332	149	103/46	50/22	129/58	50/23	24.1/613
588A036060/080	208/230-1-60, 208/230-3-60, 460-3-60	336	153	86/39	76/35	111/50	63/29	24.1/613
588A036100/120	208/230-1-60, 208/230-3-60, 460-3-60	348	158	89/40	79/36	114/52	66/30	24.1/613
588A042060/080	208/230-1-60, 208/230-3-60, 460-3-60	375	170	95/43	86/39	119/54	75/34	28.1/714
588A042100/120	208/230-1-60, 208/230-3-60, 460-3-60	387	176	98/45	89/40	122/55	78/35	28.1/714









Unit 588A018-042 Without Base Rail

DIMENSIONAL DRAWINGS (cont)

UNIT	F in./mm	G in./mm	CENTER OF GRAVITY in./mm		
			X	Y	Z
588A018040	19⅞/504.8	22¼/565.4	25.04/636	22.72/577	13.16/334.3
588A024040			26.90/683.3	20.17/512.3	
588A024060			26.82/681.2	20.22/513.6	
588A030040			26.57/674.9	20.1 /509.3	
588A030060/080			26.93/684	21.1 /535.4	
588A036060/080			27.31/693.7	21.0 /532.6	
588A036100/120			27.23/691.6	21.0 /533.1	
588A042060/080	23⅞/606.4	26¼/666.8	26.87/682.5	21.0 /533.1	14.96/380
588A042100/120			26.81/681	21.0 /533.7	

LEGEND

CG — Center of Gravity
COND — Condenser
LV — Low Voltage
MAT'L — Material
NEC — National Electrical Code
REQ'D — Required

NOTES:
1. Clearances must be maintained to prevent recirculation of air from outdoor-fan discharge.
2. Adequate clearance around air openings into combustion chamber must be provided.

REQ'D CLEARANCES FOR SERVICING. in. (mm)

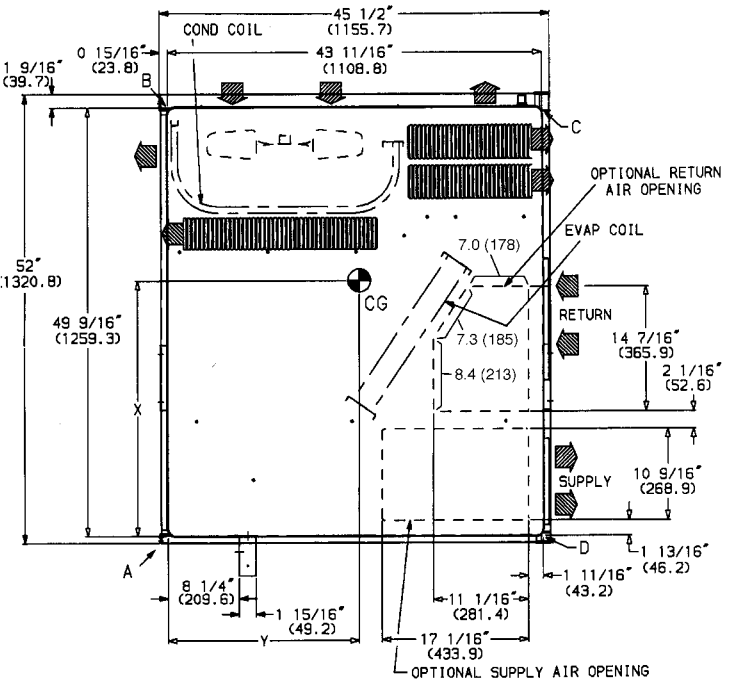
Duct panel 0
Unit top 36 (914)
Side opposite ducts 36 (914)
Compressor access 36 (914)
(Except for NEC requirements)

REQ'D CLEARANCES TO COMBUSTIBLE MAT'L. in. (mm)

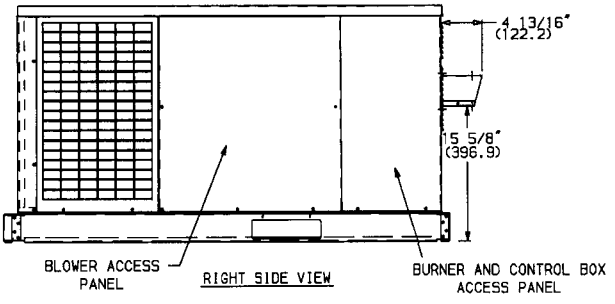
Maximum extension of overhangs 48 (1219)
Unit top 14 (356)
Duct side of unit 2 (51)
Side opposite ducts 14 (356)
Bottom of unit 0
Flue panel 36 (914)

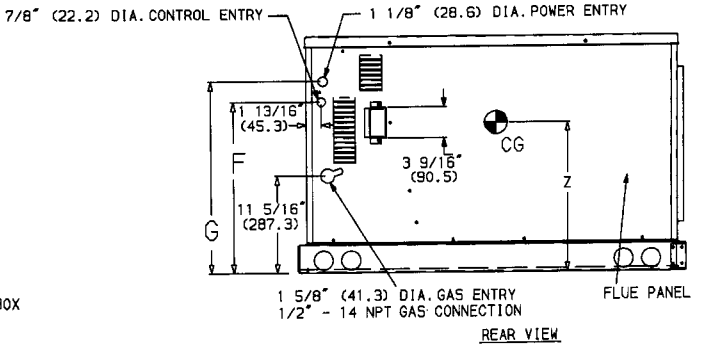
NEC REQ'D CLEARANCES. in. (mm)

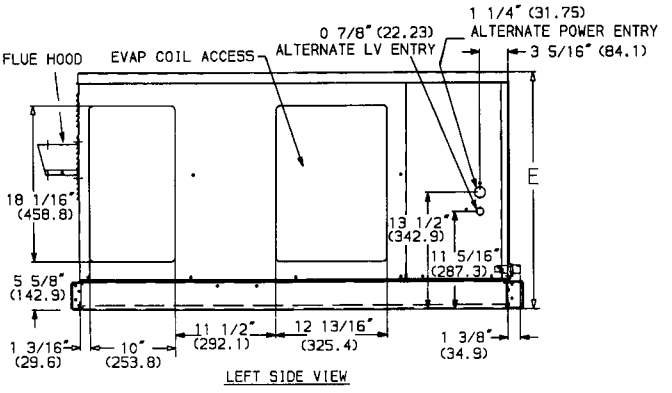
Between units, control box side 42 (1067)
Unit and ungrounded surfaces, control box side 36 (914)
Unit and block or concrete walls and other grounded surfaces, control box side 42 (1067)

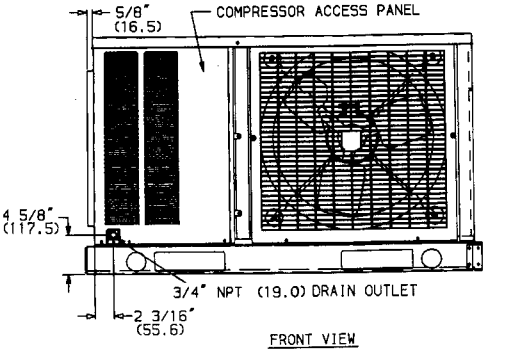


UNIT	ELECTRICAL CHARACTERISTICS	UNIT WEIGHT		CORNER WEIGHT (lb/kg)				UNIT HEIGHT (in./mm)
		lb	kg	A	B	C	D	E
588A018040	208/230-1-60	296	135	87/40	68/31	82/37	59/27	27.4/697
588A024040	208/230-1-60	327	149	103/47	49/22	129/59	46/21	27.4/697
588A024060	208/230-1-60	339	155	106/48	52/24	132/60	49/22	27.4/697
588A030040	208/230-1-60, 208/230-3-60	344	157	106/48	53/24	132/60	53/24	27.4/697
588A030060/080	208/230-1-60, 208/230-3-60	356	162	102/46	71/32	123/56	60/27	27.4/697
588A036060/080	208/230-1-60, 208/230-3-60, 460-3-60	360	164	92/42	82/37	117/53	69/31	27.4/697
588A036100/120	208/230-1-60, 208/230-3-60, 460-3-60	372	169	95/43	85/39	120/55	72/33	27.4/697
588A042060/080	208/230-1-60, 208/230-3-60, 460-3-60	399	181	101/46	92/42	125/57	81/37	31.4/798
588A042100/120	208/230-1-60, 208/230-3-60, 460-3-60	411	187	104/47	95/43	128/58	84/38	31.4/798









Unit 588A018-060 With Optional Base Rail

REQ'D CLEARANCES FOR SERVICING. in. (mm)

Duct panel 0
Unit top 36 (914)
Side opposite ducts 36 (914)
Compressor access 36 (914)
(Except for NEC requirements)

REQ'D CLEARANCES TO COMBUSTIBLE MAT'L. in. (mm)

Maximum extension of overhangs 48 (1219)
Unit top 14 (356)
Duct side of unit 2 (51)
Side opposite ducts 14 (356)
Bottom of unit 0
Flue panel 36 (914)

NEC REQ'D CLEARANCES. in. (mm)

Between units, control box side 42 (1067)
Unit and ungrounded surfaces, control box side 36 (914)
Unit and block or concrete walls and other grounded surfaces, control box side 42 (1067)

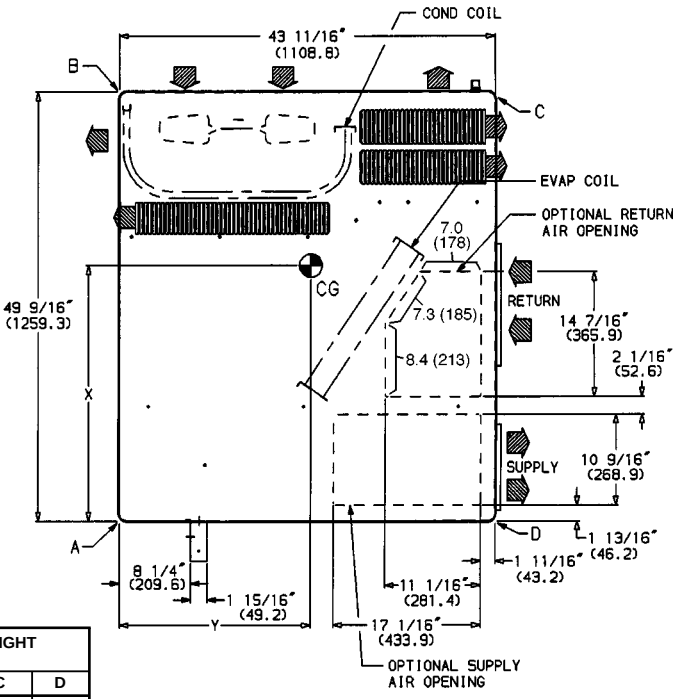
LEGEND

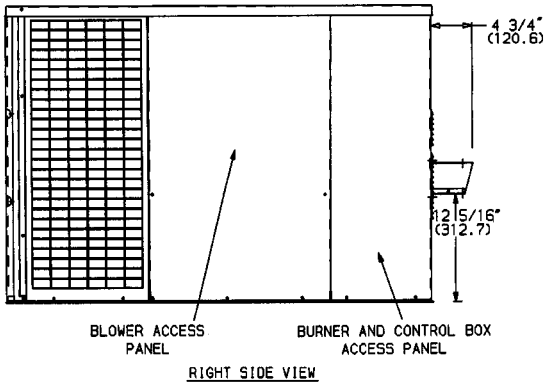
CG — Center of Gravity
COND — Condenser
LV — Low Voltage
MAT'L — Material
NEC — National Electrical Code
REQ'D — Required

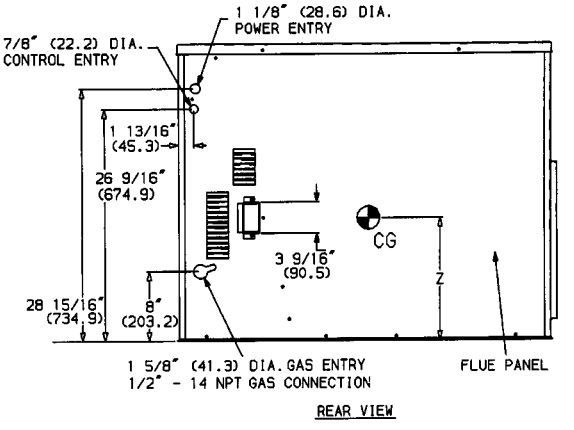
NOTES:
1. Clearances must be maintained to prevent recirculation of air from outdoor-fan discharge.
2. Adequate clearance around air openings into combustion chamber must be provided.

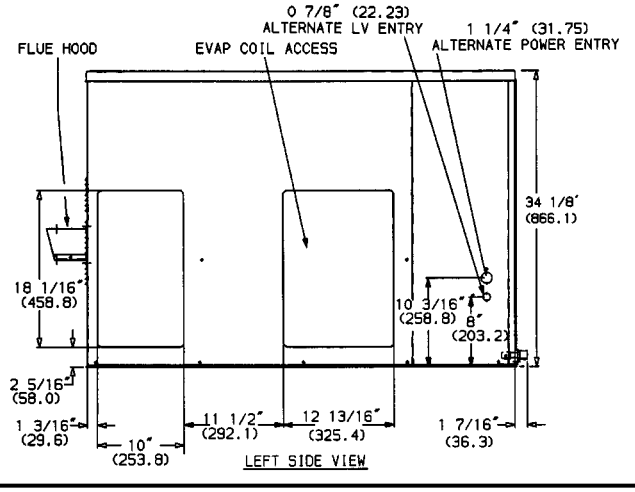
UNIT	CENTER OF GRAVITY (in./mm)		
	X	Y	Z
588A048080	28.76/731	23.46/596	15.35/390
588A048100/120/140	28.42/722	23.42/595	15.35/390
588A060080	28.36/720	23.27/591	15.35/390
588A060100/120/140	27.95/710	23.23/590	15.35/390

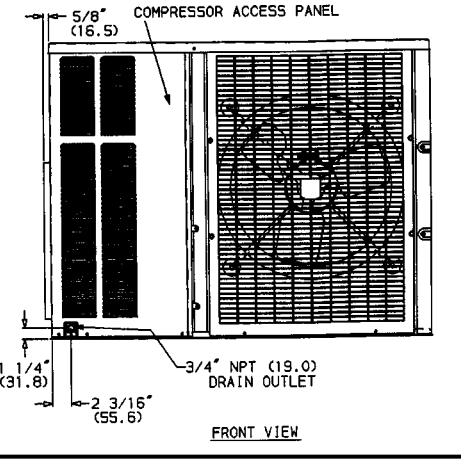
UNIT	ELECTRICAL CHARACTERISTICS	UNIT WEIGHT		CORNER WEIGHT (lb/kg)			
		lb	kg	A	B	C	D
588A048080	208/230-1-60, 208/230-3-60, 460-3-60	414	188	107/49	83/38	158/72	66/30
588A048100/120/140	208/230-1-60, 208/230-3-60, 460-3-60	426	193	110/50	86/39	159/72	71/32
588A060080	208/230-1-60, 208/230-3-60, 460-3-60	453	206	117/53	93/42	167/76	76/35
588A060100/120/140	208/230-1-60, 208/230-3-60, 460-3-60	465	211	120/55	96/44	167/76	82/37











Unit 588A048,060 Without Base Rail

REQ'D CLEARANCES FOR SERVICING. in. (mm)

Duct panel 0
Unit top 36 (914)
Side opposite ducts 36 (914)
Compressor access 36 (914)
(Except for NEC requirements)

REQ'D CLEARANCES TO COMBUSTIBLE MAT'L. in. (mm)

Maximum extension of overhangs 48 (1219)
Unit top 14 (356)
Duct side of unit 2 (51)
Side opposite ducts 14 (356)
Bottom of unit 0
Flue panel 36 (914)

NEC REQ'D CLEARANCES. in. (mm)

Between units, control box side 42 (1067)
Unit and ungrounded surfaces, control box side 36 (914)
Unit and block or concrete walls and other grounded surfaces, control box side 42 (1067)

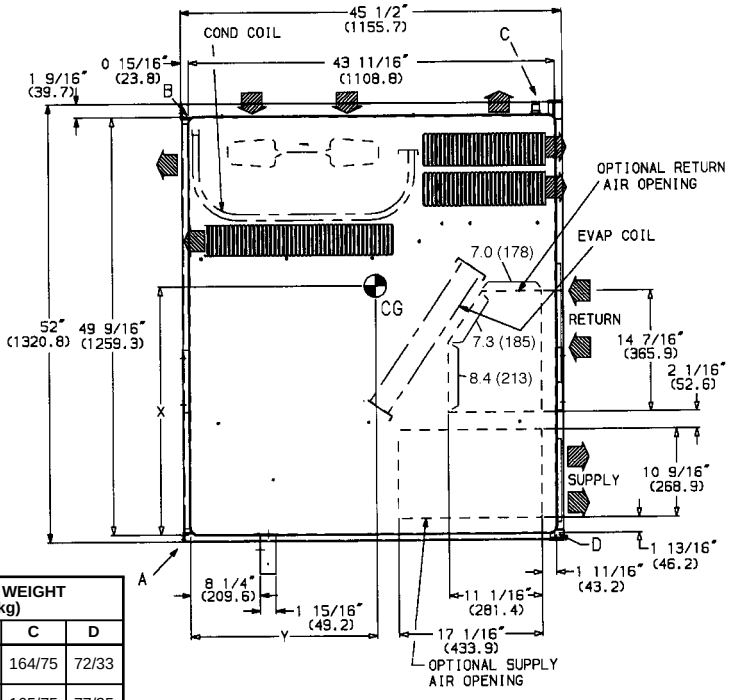
LEGEND

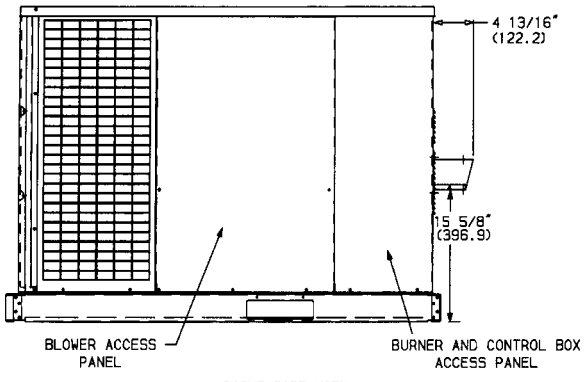
CG — Center of Gravity
COND — Condenser
LV — Low Voltage
MAT'L — Material
NEC — National Electrical Code
REQ'D — Required

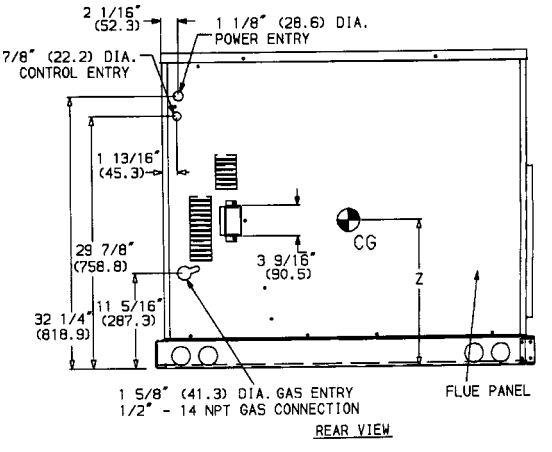
NOTES:
1. Clearances must be maintained to prevent recirculation of air from outdoor-fan discharge.
2. Adequate clearance around air openings into combustion chamber must be provided.

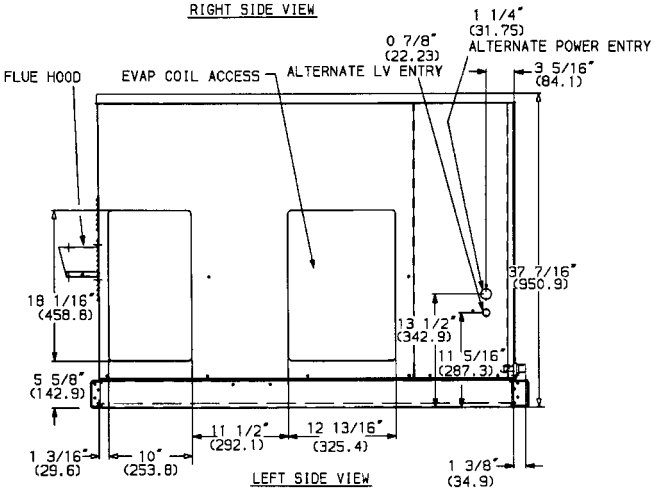
UNIT	CENTER OF GRAVITY (in./mm)		
	X	Y	Z
588A048080	28.54/724.9	20.00/508	17.66/448.6
588A048100/120/140	28.22/716.8	20.05/509.3	17.66/448.6
588A060080	28.18/715.6	20.19/512.8	17.66/448.6
588A060100/120/140	27.79/705.9	20.23/513.8	17.66/448.6

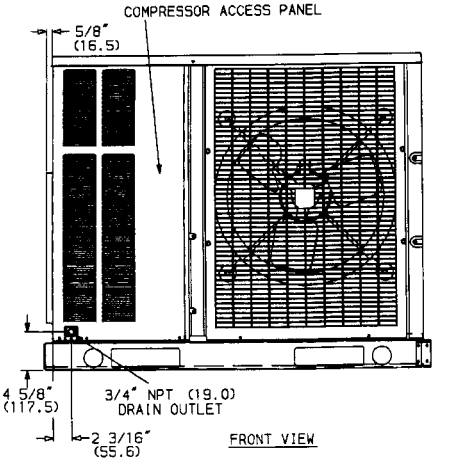
UNIT	ELECTRICAL CHARACTERISTICS	UNIT WEIGHT		CORNER WEIGHT (lb/kg)			
		lb	kg	A	B	C	D
588A048080	208/230-1-60, 208/230-3-60, 460-3-60	438	199	113/51	89/40	164/75	72/33
588A048100/120/140	208/230-1-60, 208/230-3-60, 460-3-60	450	205	116/53	92/42	165/75	77/35
588A060080	208/230-1-60, 208/230-3-60, 460-3-60	477	217	123/56	99/45	173/79	82/37
588A060100/120/140	208/230-1-60, 208/230-3-60, 460-3-60	489	222	126/57	102/46	173/79	88/40









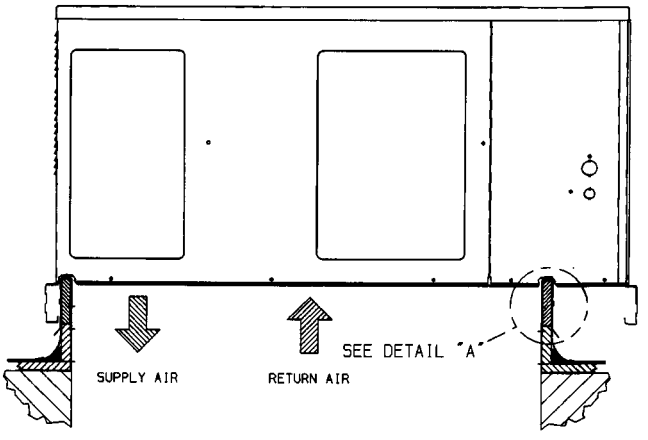


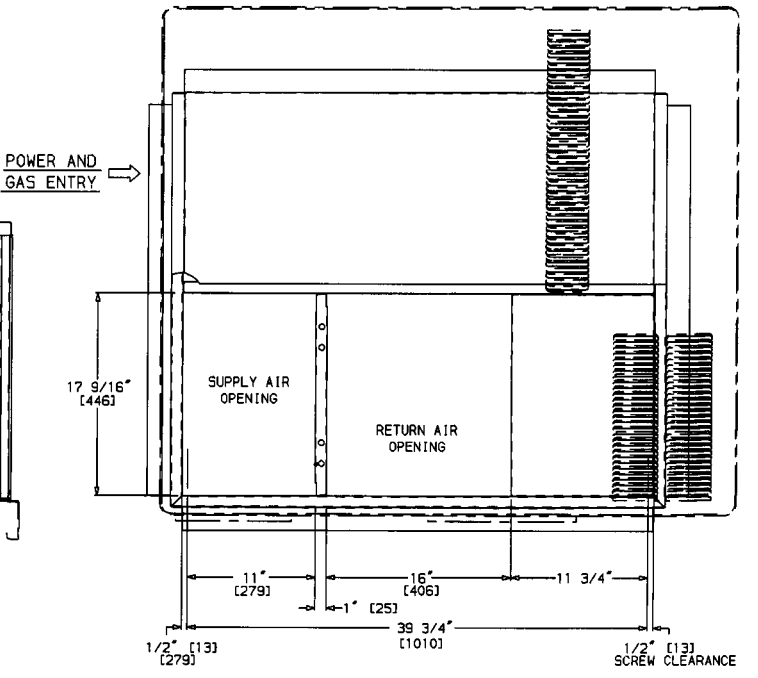
Unit 588A048,060 With Optional Base Rail

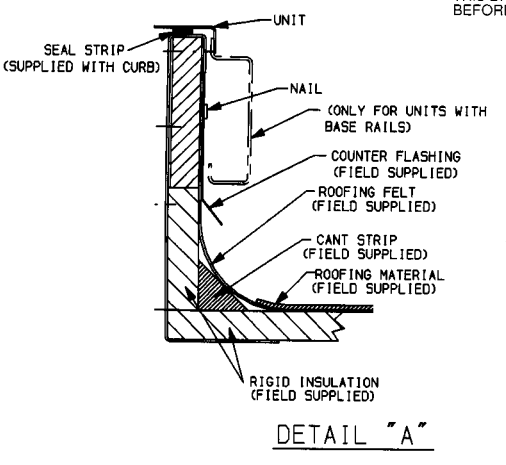
DIMENSIONAL DRAWINGS (cont)

UNIT	PART NUMBER	"A"
588A	CPRFCURB001A00	8″ [203]
	CPRFCURB002A00	11″ [279]
	CPRFCURB003A00	14″ [356]

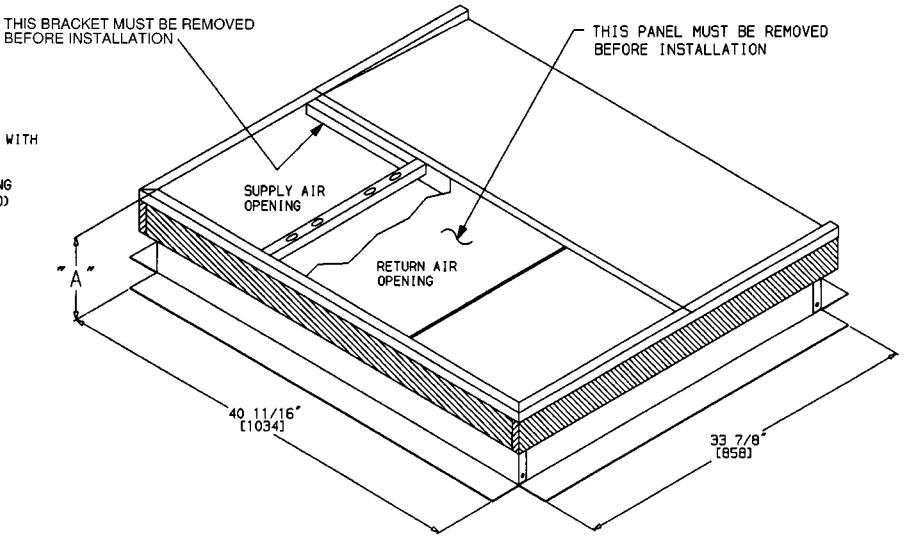
NOTES:
1. Roof curb must be set up for unit being installed.
2. Seal strip must be applied as required for unit being installed.
3. Dimensions in [ ] are in millimeters.
4. Roof curb is made of 16 gage steel.
5. Attach ductwork to curb (flanges of duct rest on curb).
6. Service clearance 4 ft on each side.
7. Direction of airflow.
8. Insulated panels: 1-in. thick fiberglass, 1 lb density.





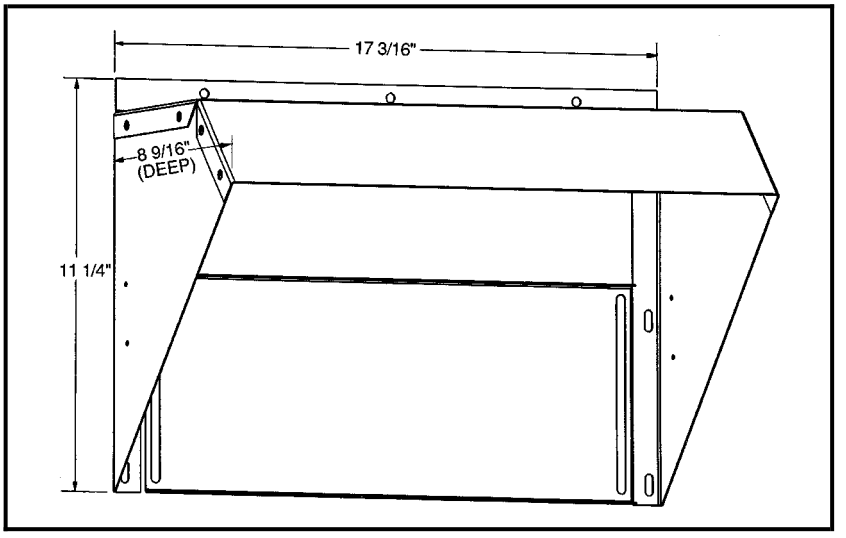


DETAIL "A"

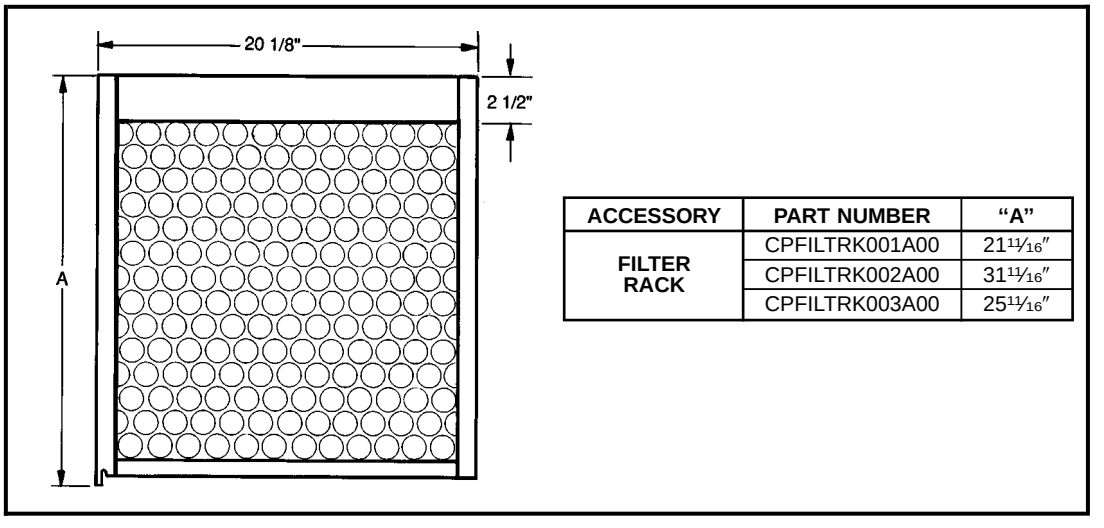


Roof Curb, Sizes 018-060

DIMENSIONAL DRAWINGS (cont)



Manual Outdoor-Air Damper



ACCESSORY	PART NUMBER	"A"
FILTER RACK	CPFILTRK001A00	21 11/16"
	CPFILTRK002A00	31 11/16"
	CPFILTRK003A00	25 11/16"

Filter Racks and Filters

SPECIFICATIONS

UNIT SIZE 588A	018040	024040	024060	030040	030060	030080
NOMINAL CAPACITY (tons)	1½	2	2	2½	2½	2½
OPERATING WEIGHT (lb)						
Without Base Rail	272	303	315	320	324	324
With Optional Base Rail	296	327	339	344	356	356
COMPRESSOR						
Type	Rotary	Reciprocating				
Quantity	1	1				
REFRIGERANT	R-22					
Charge (lb)	2.60	2.75	2.75	3.40	3.40	3.40
REFRIGERANT METERING DEVICE	Fixed Orifice Metering Device					
CONDENSER COIL						
Face Area (sq ft)	5.95	5.95	5.95	5.95	5.95	5.95
Rows...Fins/in.	1...17	1...17	1...17	2...17	2...17	2...17
CONDENSER FAN						
Nominal Airflow (cfm)	1700	1700	1700	1900	1900	1900
Nominal Speed (rpm)	850	850	850	1050	1050	1050
Quantity...Diameter (in.)	1...18	1...18	1...18	1...18	1...18	1...18
Motor Hp	⅛	⅛	⅛	¼	¼	¼
EVAPORATOR COIL						
Face Area (sq ft)	1.83	2.29	2.29	2.29	2.29	2.29
Rows...Fins/in.	3...15	3...15	3...15	3...15	3...15	3...15
EVAPORATOR FAN						
Nominal Airflow (cfm)	600	800	800	1000	1000	1000
Nominal Speed (rpm)	825	1075	1075	1075	1075	1075
Diameter x Width (in.)	10 x 10	10 x 10	10 x 10	10 x 10	10 x 10	10 x 10
Motor Hp (single-phase)	¼	¼	¼	¼	¼	¼
(three-phase)	—	—	—	¼	¼	¼
FURNACE SECTION*						
Burner Orifice No. (Qty...drill size) Natural Gas	1...32	1...32	2...40	1...32	2...40	2...32
Burner Orifice No. (Qty...drill size) Propane Gas	1...41	1...41	2...47	1...41	2...47	2...42
RETURN-AIR FILTERS (in.)†						
Throwaway	20 x 20	20 x 20	20 x 20	20 x 24	20 x 24	20 x 24

UNIT SIZE 588A	036060	036080	036100	036120	042060	042080
NOMINAL CAPACITY (tons)	3	3	3	3	3½	3½
OPERATING WEIGHT (lb)						
Without Base Rail	336	336	348	348	375	375
With Optional Base Rail	360	360	372	372	399	399
COMPRESSOR						
Type	Reciprocating					
Quantity	1					
REFRIGERANT	R-22					
Charge (lb-oz)	4.30	4.30	4.30	4.30	5.20	5.20
REFRIGERANT METERING DEVICE	Fixed Orifice Metering Device					
CONDENSER COIL						
Face Area (sq ft)	5.95	5.95	5.95	5.95	7.04	7.04
Rows...Fins/in.	2...17	2...17	2...17	2...17	2...17	2...17
CONDENSER FAN						
Nominal Airflow (cfm)	1900	1900	1900	1900	1900	1900
Nominal Speed (rpm)	1050	1050	1050	1050	1050	1050
Quantity...Diameter (in.)	1...18	1...18	1...18	1...18	1...18	1...18
Motor Hp	¼	¼	¼	¼	¼	¼
EVAPORATOR COIL						
Face Area (sq ft)	3.06	3.06	3.06	3.06	3.33	3.33
Rows...Fins/in.	3...15	3...15	3...15	3...15	3...15	3...15
EVAPORATOR FAN						
Nominal Airflow (cfm)	1200	1200	1200	1200	1400	1400
Nominal Speed (rpm)	1100	1100	1100	1100	1100	1100
Diameter x Width (in.)	10 x 10	10 x 10	10 x 10	10 x 10	10 x 10	10 x 10
Motor Hp (single-phase)	½	½	½	½	¾	¾
(three-phase)	½	½	½	½	¾	¾
FURNACE SECTION*						
Burner Orifice No. (Qty...drill size) Natural Gas	2...40	2...32	2...30	3...32	2...40	2...32
Burner Orifice No. (Qty...drill size) Propane Gas	2...47	2...42	2...40	3...42	2...47	2...42
RETURN-AIR FILTERS (in.)†						
Throwaway	20 x 24	20 x 24	20 x 24	20 x 24	24 x 24	24 x 24

*Based on an altitude of 0-2000 ft.
†Required field-supplied filter sizes are based on the larger of the ARI-rated (Air Conditioning & Refrigeration Institute) cooling airflow or the heating airflow at a velocity of 300 ft/min for throwaway type. Air filter pressure drop for non-standard filters must not exceed 0.08 in. wg.
**Sq inch. Filter is mounted external to unit.

SPECIFICATIONS (cont)

UNIT SIZE 588A	042100	042120	048080	048100	048120	048140
NOMINAL CAPACITY (tons)	3½	3½	4	4	4	4
OPERATING WEIGHT (lb)						
Without Base Rail	387	387	414	426	426	426
With Optional Base Rail	411	411	438	450	450	450
COMPRESSOR						
Type	Reciprocating		Hermetic Scroll			
Quantity	1		1			
REFRIGERANT	R-22					
Charge (lb)	5.20	5.20	6.50	6.50	6.50	6.50
REFRIGERANT METERING DEVICE	Fixed Orifice Metering Device					
CONDENSER COIL						
Face Area (sq ft)	7.04	7.04	8.67	8.67	8.67	8.67
Rows...Fins/in.	2...17	2...17	2...17	2...17	2...17	2...17
CONDENSER FAN						
Nominal Airflow (cfm)	1900	1900	2400	2400	2400	2400
Nominal Speed (rpm)	1050	1050	1050	1050	1050	1050
Diameter x Width (in.)	1...18	1...18	1...20	1...20	1...20	1...20
Motor Hp	¼	¼	¼	⅓	⅓	⅓
EVAPORATOR COIL						
Face Area (sq ft)	3.33	3.33	4.44	4.44	4.44	4.44
Rows...Fins/in.	3...15	3...15	3..15	3...15	3...15	3...15
EVAPORATOR FAN						
Nominal Airflow (cfm)	1400	1400	1600	1600	1600	1600
Nominal Speed (rpm)	1100	1100	1100	1100	1100	1100
Diameter x Width (in.)	10 x 10	10 x 10	10 x 10	10 x 10	10 x 10	10 x 10
Motor Hp (single-phase)	¾	¾	¾	¾	¾	¾
(three-phase)	¾	¾	¾	¾	¾	¾
FURNACE SECTION*						
Burner Orifice No. (Qty...drill size) Natural Gas	2...30	3...32	2...32	2...30	3...32	3...31
Burner Orifice No. (Qty...drill size) Propane Gas	2...40	3...42	2...42	2...40	3...42	3...40
RETURN-AIR FILTERS (in.)†						
Throwaway	24 x 24	24 x 24	24 x 30	24 x 30	24 x 30	816**

UNIT SIZE 588A	060080	060100	060120	060140
NOMINAL CAPACITY (tons)	5	5	5	5
OPERATING WEIGHT (lb)				
Without Base Rail	453	465	465	465
With Optional Base Rail	477	489	489	489
COMPRESSOR				
Type	Hermetic Scroll			
Quantity	1			
REFRIGERANT	R-22			
Charge (lb)	7.00	7.00	7.00	7.00
REFRIGERANT METERING DEVICE	Fixed Orifice Metering Device			
CONDENSER COIL				
Face Area (sq ft)	8.67	8.67	8.67	8.67
Rows...Fins/in.	2...17	2...17	2...17	2...17
CONDENSER FAN				
Nominal Airflow (cfm)	2400	2400	2400	2400
Nominal Speed (rpm)	1050	1050	1050	1050
Quantity...Diameter (in.)	1...20	1...20	1...20	1...20
Motor Hp	⅓	⅓	⅓	⅓
EVAPORATOR COIL				
Face Area (sq ft)	4.44	4.44	4.44	4.44
Rows...Fins/in.	4...15	4...15	4...15	4...15
EVAPORATOR FAN				
Nominal Airflow (cfm)	1995	1995	1995	1995
Nominal Speed (rpm)	1100	1100	1100	1100
Diameter x Width (in.)	10 x 10	10 x 10	10 x 10	10 x 10
Motor Hp (single-phase)	1	1	1	1
(three-phase)	1	1	1	1
FURNACE SECTION*				
Burner Orifice No. (Qty...drill size) Natural Gas	2...32	2...30	3...32	3...31
Burner Orifice No. (Qty...drill size) Propane Gas	2...42	2...40	3...42	3...40
RETURN-AIR FILTERS (in.)†				
Throwaway	24 x 30	24 x 30	24 x 30	960**

*Based on an altitude of 0-2000 ft.

†Required field-supplied filter sizes are based on the larger of the ARI-rated (Air Conditioning & Refrigeration Institute) cooling airflow or the heating airflow at a velocity of 300 ft/min for throwaway type. Air filter pressure drop for non-standard filters must not exceed 0.08 in. wg.

**Sq inch. Filter is mounted external to unit.

SELECTION PROCEDURE

I DETERMINE COOLING AND HEATING REQUIREMENTS AT DESIGN CONDITIONS:

Given:

Required Cooling Capacity (TC) . . . . . 34,000 Btuh
Sensible Heat Capacity (SHC) . . . . . 24,000 Btuh
Required Heating Capacity . . . . . 60,000 Btuh
Condenser Entering-Air Temperature . . . . . 95 F
Indoor-Air Temperature . . . . . 80 F edb, 67 F ewb
Evaporator-Air Quantity . . . . . 1200 cfm
External Static Pressure . . . . . 0.20 in. wg
Electrical Characteristics (V-Ph-Hz) 208-1-60

II SELECT UNIT BASED ON REQUIRED COOLING CAPACITY.

Enter Net Cooling Capacities table at condenser entering temperature of 95 F. Unit 588A036 at 1200 cfm and 67 F ewb (entering wet bulb) will provide a total capacity of 36,000 Btuh and an SHC of 26,200 Btuh. Calculate SHC correction, if required, using Note 4 under Net Cooling Capacities tables.

III SELECT HEATING CAPACITY OF UNIT TO PROVIDE DESIGN CONDITION REQUIREMENT.

In the Heating Capacities and Efficiencies table on page 4, note that unit 588A036080 will provide 64,800 Btuh with an input of 80,000 Btuh.

IV DETERMINE FAN SPEED AND POWER REQUIREMENTS AT DESIGN CONDITIONS.

Before entering the air delivery tables, calculate the total static pressure required. From the given, the Wet Coil Pressure Drop table, and the Filter Pressure Drop table on page 19, find at 1200 cfm:

External static pressure	0.20 in. wg
Wet Coil	0.088 in. wg
Filter	0.13 in. wg
Total static pressure	0.42 in. wg (rounded)

Enter the table for Dry Coil Air Delivery — Horizontal Discharge for 230 and 460 V on page 17. For 208 v operation, deduct 10% from value given. The fan will deliver 1233 cfm at 0.4 external static pressure (1370 x 0.9) at high speed and 852 cfm at 0.5 external static pressure (946 x 0.9) at low speed. The fan speed should be set at high to satisfy job requirements.

V SELECT UNIT THAT CORRESPONDS TO POWER SOURCE AVAILABLE.

The Electrical Data table on page 20 shows that the unit is designed to operate at 208-1-60.

NET COOLING CAPACITIES

588A018 (1½ TONS)

Indoor Coil Air			Outdoor Coil Entering-Air Temperature (F)											
			85			95			105			115		
Cfm	BF	Ewb (F)	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW
			Total	Sensible		Total	Sensible		Total	Sensible		Total	Sensible	
525	0.10	72	19.0	8.70	1.85	18.5	8.56	2.00	17.9	8.37	2.15	17.1	8.10	2.31
		67	17.4	11.2	1.80	16.9	11.1	1.95	16.2	10.9	2.10	15.5	10.6	2.26
		62	15.8	13.6	1.76	15.3	13.4	1.90	14.6	13.2	2.05	13.8	12.8	2.20
600	0.12	72	19.2	8.97	1.90	18.7	8.87	2.05	18.0	8.60	2.20	17.3	8.44	2.37
		67	17.6	11.8	1.86	17.0	11.6	2.00	16.3	11.4	2.15	15.6	11.2	2.31
		62	16.0	14.4	1.81	15.5	14.2	1.95	14.9	14.0	2.10	14.1	13.6	2.25
675	0.13	72	19.3	9.18	1.95	18.8	9.08	2.10	18.0	8.83	2.25	17.4	8.73	2.42
		67	17.8	12.4	1.91	17.1	12.2	2.05	16.4	12.0	2.20	15.7	11.7	2.36
		62	16.1	15.1	1.86	15.6	14.9	2.01	14.9	14.6	2.15	14.3	14.2	2.31

588A024 (2 TONS)

Indoor Coil Air			Outdoor Coil Entering-Air Temperature (F)											
			85			95			105			115		
Cfm	BF	Ewb (F)	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW
			Total	Sensible		Total	Sensible		Total	Sensible		Total	Sensible	
700	0.06	72	27.8	13.2	2.69	26.3	12.7	2.84	24.6	12.1	2.97	22.9	11.6	3.10
		67	25.1	16.6	2.60	23.6	16.1	2.73	22.0	15.5	2.86	20.3	14.9	2.97
		62	22.5	19.8	2.51	21.1	19.3	2.63	19.6	18.5	2.74	17.9	17.6	2.85
800	0.07	72	28.3	13.7	2.75	26.6	13.1	2.89	25.0	12.7	3.03	23.2	12.2	3.16
		67	25.6	17.6	2.65	24.0	17.1	2.82	22.4	16.5	2.92	20.6	15.9	3.03
		62	23.0	21.2	2.56	21.5	20.5	2.69	20.0	19.7	2.81	18.6	18.5	2.93
900	0.08	72	28.7	14.2	2.80	27.0	13.7	2.95	25.3	13.2	3.09	23.5	12.7	3.21
		67	26.0	18.6	2.71	24.4	18.1	2.85	22.6	17.4	2.97	20.9	16.9	3.09
		62	23.4	22.3	2.62	21.9	21.5	2.75	20.5	20.5	2.88	19.2	19.2	3.01

588A030 (2½ TONS)

Indoor Coil Air			Outdoor Coil Entering-Air Temperature (F)											
			85			95			105			115		
Cfm	BF	Ewb (F)	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW
			Total	Sensible		Total	Sensible		Total	Sensible		Total	Sensible	
875	0.08	72	33.7	16.3	3.16	31.7	15.6	3.33	29.9	15.0	3.49	27.6	14.2	3.62
		67	30.7	21.0	3.09	28.8	20.4	3.25	26.9	19.6	3.40	24.8	18.8	3.53
		62	27.5	25.2	3.01	25.8	24.4	3.16	23.9	23.4	3.30	21.9	21.9	3.44
1000	0.09	72	34.0	16.9	3.22	32.3	16.4	3.40	30.1	15.6	3.54	28.0	15.0	3.89
		67	31.1	22.3	3.15	29.2	21.6	3.32	27.2	20.9	3.46	25.0	20.1	3.59
		62	28.0	26.8	3.07	26.3	25.9	3.23	24.6	24.6	3.38	22.9	22.9	3.52
1125	0.10	72	34.5	17.6	3.28	32.4	16.9	3.44	30.5	16.4	3.61	28.1	15.6	3.74
		67	31.3	23.4	3.20	29.4	22.7	3.37	27.5	22.1	3.62	25.2	21.2	3.64
		62	28.4	28.2	3.13	26.9	26.9	3.30	25.3	25.3	3.45	23.6	23.6	3.59

LEGEND

BF — Bypass Factor
Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
Ldb — Leaving Dry-Bulb
Lwb — Leaving Wet-Bulb
SHC — Sensible Heat Capacity (1000 Btuh)

NOTES:

1. Ratings are net; they account for the effects of the indoor-fan motor power and heat.
2. Direct interpolation is permissible. Do not extrapolate.
3. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh x 1000)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving indoor coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh x 1000)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering indoor coil

4. The SHC is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHC.
   Above 80 F edb, add (corr factor x cfm) to SHC.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

NET COOLING CAPACITIES (cont)

588A036 (3 TONS)

Indoor Coil Air			Outdoor Coil Entering-Air Temperature (F)											
			85			95			105			115		
Cfm	BF	Ewb (F)	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW
			Total	Sensible		Total	Sensible		Total	Sensible		Total	Sensible	
1050	0.07	72	41.7	19.9	3.99	39.3	19.1	4.18	37.2	18.4	4.39	34.7	17.5	4.57
		67	37.6	25.4	3.86	35.5	24.7	4.05	33.2	23.8	4.23	30.9	22.9	4.41
		62	33.6	30.5	3.72	31.2	29.4	3.90	28.8	28.2	4.08	26.7	26.7	4.26
1200	0.08	72	42.3	20.7	4.08	40.2	20.1	4.29	37.6	19.2	4.48	35.0	18.3	4.66
		67	38.3	27.1	3.95	36.0	26.2	4.14	33.7	25.4	4.32	31.3	24.5	4.50
		62	34.2	32.5	3.81	31.9	31.4	3.99	30.0	30.0	4.17	28.1	28.1	4.37
1350	0.09	72	42.6	21.4	4.15	40.4	20.8	4.36	37.9	20.0	4.56	35.2	19.0	4.73
		67	38.7	28.5	4.03	36.4	27.7	4.22	34.0	26.8	4.41	31.6	25.9	4.58
		62	34.8	34.2	3.90	32.8	32.8	4.09	31.1	31.0	4.29	29.2	29.2	4.48

588A042 (3½ TONS)

Indoor Coil Air			Outdoor Coil Entering-Air Temperature (F)											
			85			95			105			115		
Cfm	BF	Ewb (F)	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW
			Total	Sensible		Total	Sensible		Total	Sensible		Total	Sensible	
1225	0.11	72	47.9	23.5	4.57	45.3	22.5	4.81	43.0	21.8	5.08	40.1	20.7	5.30
		67	44.2	30.0	4.43	41.8	29.2	4.67	39.3	28.2	4.90	36.7	27.2	5.12
		62	40.3	36.1	4.28	38.0	34.9	4.50	35.7	33.8	4.73	33.3	32.5	4.94
1400	0.12	72	48.5	24.3	4.66	45.9	23.4	4.91	43.3	22.5	5.17	40.4	21.4	5.39
		67	44.9	31.7	4.52	42.5	30.9	4.77	39.9	29.9	5.01	37.2	28.8	5.23
		62	41.1	38.3	4.38	38.8	37.1	4.61	36.4	35.8	4.84	34.1	34.1	5.06
1575	0.14	72	49.0	25.0	4.75	46.4	24.2	5.00	43.7	23.4	5.26	40.8	22.3	5.49
		67	45.4	33.2	4.61	43.0	32.5	4.87	40.4	31.5	5.10	37.6	30.4	5.32
		62	41.8	40.2	4.48	39.4	38.9	4.71	37.2	37.2	4.94	35.0	35.0	5.18

588A048 (4 TONS)

Indoor Coil Air			Outdoor Coil Entering-Air Temperature (F)											
			85			95			105			115		
Cfm	BF	Ewb (F)	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW
			Total	Sensible		Total	Sensible		Total	Sensible		Total	Sensible	
1400	0.08	72	52.9	25.6	4.95	50.9	24.8	5.38	48.8	24.1	5.83	46.4	23.4	6.34
		67	48.3	32.7	4.85	46.4	32.1	5.28	44.2	31.2	5.73	41.5	30.2	6.22
		62	43.8	39.4	4.76	41.9	38.6	5.17	39.3	37.3	5.61	36.6	35.9	6.08
1600	0.10	72	53.7	26.4	5.07	51.7	25.9	5.50	49.2	25.1	5.95	47.0	24.3	6.45
		67	49.1	34.6	4.97	47.0	33.9	5.40	44.7	33.1	5.85	42.4	32.4	6.34
		62	44.5	41.9	4.87	42.6	41.1	5.29	40.1	39.7	5.74	37.7	37.6	6.22
1800	0.11	72	53.9	27.1	5.17	52.2	26.8	5.61	49.6	26.0	6.06	47.4	25.4	6.57
		67	49.6	36.4	5.08	47.5	35.9	5.51	45.2	35.1	5.96	42.8	34.2	6.46
		62	45.1	44.1	4.99	43.3	43.1	5.41	41.2	41.2	5.87	39.0	39.0	6.36

LEGEND

BF — Bypass Factor
Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
Ldb — Leaving Dry-Bulb
Lwb — Leaving Wet-Bulb
SHC — Sensible Heat Capacity (1000 Btuh)

NOTES:

1. Ratings are net; they account for the effects of the indoor-fan motor power and heat.
2. Direct interpolation is permissible. Do not extrapolate.
3. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh x 1000)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving indoor coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh x 1000)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering indoor coil

4. The SHC is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHC.
   Above 80 F edb, add (corr factor x cfm) to SHC.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

NET COOLING CAPACITIES (cont)

588A060 (5 TONS)													
Indoor Coil Air			Outdoor Coil Entering-Air Temperature (F)										
			85			95			105			115	
Cfm	BF	Ewb (F)	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW	Capacity (Btuh x 1000)		Total System kW
			Total	Sensible		Total	Sensible		Total	Sensible		Total	Sensible	
1750	0.03	72	69.4	34.2	6.53	66.2	33.2	7.05	62.9	32.1	7.60	59.5	30.9	8.19
		67	62.0	43.7	6.33	58.8	42.4	6.82	55.1	41.1	7.37	52.0	40.0	7.94
		62	55.0	52.4	6.14	51.8	51.0	6.62	48.7	48.7	7.17	45.8	45.8	7.77
2000	0.04	72	70.5	35.8	6.70	67.3	34.8	7.22	63.9	33.7	7.78	60.5	32.6	8.36
		67	63.1	46.7	6.50	59.5	45.3	7.00	56.0	44.0	7.54	52.8	42.8	8.12
		62	56.3	56.1	6.32	53.6	53.5	6.83	51.0	50.9	7.39	48.5	48.4	7.98
2250	0.05	72	71.3	37.4	6.88	68.1	36.3	7.39	64.5	35.3	7.95	60.8	34.1	8.53
		67	63.9	49.5	6.67	60.2	48.2	7.17	56.7	46.9	7.71	53.4	45.6	8.29
		62	58.2	58.1	6.52	55.6	55.6	7.03	53.0	52.8	7.59	50.4	50.3	8.18

LEGEND

BF — Bypass Factor
Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
Ldb — Leaving Dry-Bulb
Lwb — Leaving Wet-Bulb
SHC — Sensible Heat Capacity (1000 Btuh)

NOTES:

1. Ratings are net; they account for the effects of the indoor-fan motor power and heat.
2. Direct interpolation is permissible. Do not extrapolate.
3. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh x 1000)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving indoor coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh x 1000)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering indoor coil

4. The SHC is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHC.
   Above 80 F edb, add (corr factor x cfm) to SHC.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

DRY COIL AIR DELIVERY* — HORIZONTAL DISCHARGE
(Deduct 10% for 208 v)

UNIT SIZE 588A	MOTOR SPEED		230 AND 460 VOLT HORIZONTAL DISCHARGE										
			External Static Pressure (in. wg)										
			0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
018	Low	Watts	230	225	220	210	195	170	—	—	—	—	—
		Cfm	760	745	725	695	640	540	—	—	—	—	—
	High	Watts	—	—	—	—	270	235	200	—	—	—	—
		Cfm	—	—	—	—	850	700	450	—	—	—	—
024, 030	Low	Watts	275	275	273	269	260	257	249	—	—	—	—
		Cfm	857	835	802	782	745	717	663	—	—	—	—
	Med	Watts	371	368	360	349	345	326	319	304	293	—	—
		Cfm	1079	1063	1027	996	978	919	865	783	726	—	—
	High	Watts	514	493	476	460	443	425	401	378	344	—	—
		Cfm	1409	1383	1324	1282	1223	1156	1068	984	857	—	—
036	Low	Watts	473	447	427	418	395	367	346	337	323	—	—
		Cfm	1253	1253	1172	1130	1047	946	865	829	768	—	—
	Med	Watts	519	500	478	459	439	410	377	357	340	—	—
		Cfm	1414	1366	1287	1234	1162	1074	920	829	743	—	—
	High	Watts	667	634	609	593	564	541	506	469	436	422	—
		Cfm	1734	1639	1563	1461	1370	1292	1157	960	829	743	—
042	Low	Watts	678	635	604	580	550	520	493	455	430	—	—
		Cfm	1540	1515	1475	1430	1375	1280	1225	1128	1020	—	—
	High	Watts	—	820	785	750	700	680	649	612	570	—	—
		Cfm	—	1825	1750	1685	1610	1525	1485	1335	1215	—	—
048	Low	Watts	—	—	854	786	744	706	641	606	557	511	—
		Cfm	—	—	2026	1905	1830	1752	1603	1513	1367	1228	—
	High	Watts	—	—	—	905	846	824	804	748	683	637	—
		Cfm	—	—	—	2025	1905	1830	1752	1603	1398	1228	—
060	Low	Watts	1104	1093	1072	1029	986	938	891	830	769	733	697
		Cfm	1876	1865	1840	1803	1765	1710	1641	1533	1425	1345	1264
	Med	Watts	1351	1295	1245	1197	1148	1096	1053	994	936	871	812
		Cfm	2249	2209	2157	2097	2036	1959	1882	1781	1679	1542	1405
	High	Watts	—	—	1391	1343	1296	1247	1191	1129	1067	1002	936
		Cfm	—	—	2299	2231	2152	2060	1975	1859	1746	1591	1441

*Air delivery values are based on operating voltage of 230 v or 460 v, dry coil, without filter. Deduct wet coil and filter pressure drops to obtain external static pressure available for ducting.

NOTES:
1. Do not operate the unit at a cooling airflow that is less than 350 cfm for each 12,000 Btuh of rated cooling capacity. Evaporator coil frosting may occur at airflows below this point.
2. Dashes indicate portions of table that are beyond the blower motor capacity or are not recommended.

DRY COIL AIR DELIVERY* — VERTICAL DISCHARGE
(Deduct 10% for 208 v)

UNIT SIZE 588A	MOTOR SPEED		230 AND 460 VOLT VERTICAL DISCHARGE										
			External Static Pressure (in. wg)										
			0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
018	Low	Watts	—	295	251	223	201	176	149	124	—	—	—
		Cfm	—	821	817	753	665	536	343	164	—	—	—
	High	Watts	401	376	346	322	294	272	250	229	219	—	—
		Cfm	1334	1253	1128	996	816	658	461	246	167	—	—
024, 030	Low	Watts	—	285	284	282	278	274	270	261	251	244	230
		Cfm	—	798	761	727	682	634	581	525	450	371	304
	Med	Watts	—	378	371	368	362	357	343	332	315	301	283
		Cfm	—	1011	982	948	906	858	771	703	597	492	387
	High	Watts	—	520	511	487	472	451	431	411	385	362	341
		Cfm	—	1342	1289	1237	1181	1106	1007	892	745	610	471
036	Low	Watts	—	460	439	423	898	379	349	322	297	270	246
		Cfm	—	1191	1136	1081	1005	907	795	687	579	471	349
	Med	Watts	—	511	492	470	450	420	392	364	332	308	275
		Cfm	—	1316	1244	1178	1104	1005	891	784	657	535	389
	High	Watts	—	655	631	603	584	552	522	492	459	433	398
		Cfm	—	1541	1458	1367	1292	1178	1053	920	806	662	509
042	Low	Watts	—	637	612	587	560	536	493	455	—	—	—
		Cfm	—	1500	1450	1405	1350	1290	1200	1105	—	—	—
	High	Watts	—	790	750	700	699	639	608	574	547	—	—
		Cfm	—	1750	1625	1604	1509	1421	1323	1221	1094	—	—
048	Low	Watts	—	847	784	746	708	646	609	563	516	—	—
		Cfm	—	1995	1901	1822	1730	1580	1477	1319	1178	—	—
	High	Watts	—	—	909	852	820	801	751	687	639	—	—
		Cfm	—	—	2018	1896	1814	1729	1582	1380	1220	—	—
060	Low	Watts	—	983	960	923	885	845	804	751	697	665	633
		Cfm	—	1838	1808	1755	1702	1628	1553	1446	1339	1257	1175
	Med	Watts	—	1115	1083	1045	1006	964	921	872	823	783	742
		Cfm	—	2067	2023	1957	1891	1807	1723	1612	1501	1392	1282
	High	Watts	—	1284	1201	1166	1131	1092	1053	1001	980	907	864
		Cfm	—	2187	2108	2038	1968	1882	1796	1676	1555	1437	1318

*Air delivery values are based on operating voltage of 230 v or 460 v, dry coil, without filter. Deduct wet coil and filter pressure drops to obtain external static pressure available for ducting.

NOTES:
1. Do not operate the unit at a cooling airflow that is less than 350 cfm for each 12,000 Btuh of rated cooling capacity. Evaporator coil frosting may occur at airflows below this point.
2. Dashes indicate portions of table that are beyond the blower motor capacity or are not recommended.

WET COIL PRESSURE DROP

UNIT SIZE 588A	AIRFLOW (cfm)	PRESSURE DROP (in. wg)
018	600	0.069
	700	0.082
	800	0.102
	900	0.116
024	600	0.039
	700	0.058
	800	0.075
	900	0.088
030	900	0.088
	1000	0.095
	1200	0.123
036	1000	0.068
	1200	0.088
	1400	0.108
	1600	0.123
042	1000	0.048
	1200	0.069
	1400	0.088
	1600	0.102
048	1400	0.068
	1600	0.075
	1800	0.088
060	1700	0.082
	1900	0.095
	2100	0.108
	2300	0.123

FILTER PRESSURE DROP (in. wg)

UNIT SIZE 588A	FILTER SIZE (in.)	CFM																		
		500	**600**	**700**	**800**	**900**	**1000**	**1100**	**1200**	**1300**	**1400**	**1500**	**1600**	**1700**	**1800**	**1900**	**2000**	**2100**	**2200**	**2300**
018, 024	20 x 20	0.05	0.07	0.08	0.10	0.12	0.13	—	—	—	—	—	—	—	—	—	—	—	—	—
030, 036	20 x 24	—	—	—	—	0.09	0.10	0.11	0.13	0.14	0.15	0.16	—	—	—	—	—	—	—	—
042	24 x 24	—	—	—	—	—	—	—	—	0.11	0.12	0.14	0.15	—	—	—	—	—	—	—
048, 060	24 x 30	—	—	—	—	—	—	—	—	—	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18

ELECTRICAL DATA

UNIT 588A	V-PH-Hz	VOLTAGE RANGE		COMPRESSOR		COND. FAN MOTOR	INDOOR FAN	POWER SUPPLY		AWG 60 C MIN WIRE SIZE	MAX WIRE LENGTH (ft)
		Min	Max	RLA	LRA	FLA	FLA	MCA	MOCP*		
018	208/230-1-60	187	253	7.6	45	0.7	1.8	12.0	15	14	75
024	208/230-1-60	187	253	12.4	61	0.7	2.0	18.2	30	12	80
030	208/230-1-60	187	253	14.4	82	1.4	2.0	21.8	30	10	100
	208/230-3-60	187	253	9.4	66	1.4	2.0	15.5	25	12	80
036	208/230-1-60	187	253	18.0	96	1.4	2.8	26.7	40	10	90
	208/230-3-60	187	253	11.7	75	1.4	2.8	18.8	30	12	65
	460-3-60	414	506	5.6	40	0.8	1.4	9.2	10	14	100
042	208/230-1-60	187	253	20.4	104	1.4	4.0	30.9	50	8	100
	208/230-3-60	187	253	14.0	91	1.4	4.0	22.9	35	10	85
	460-3-60	414	506	6.4	42	0.8	2.0	10.8	15	14	100
048	208/230-1-60	187	253	26.4	129	2.1	5.0	40.1	60	6	100
	208/230-3-60	187	253	15.0	99	2.1	5.0	25.9	40	10	75
	460-3-60	414	506	8.2	50	1.1	2.3	13.7	20	14	100
060	208/230-1-60	187	253	32.1	169	2.1	6.8	49.0	60	6	100
	208/230-3-60	187	253	19.3	123	2.1	6.8	33.0	50	8	90
	460-3-60	414	506	10.0	62	1.1	3.2	16.8	25	12	100

LEGEND

AWG — American Wire Gage
CSA — Canadian Standards Association
FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection (fuses or HACR-type circuit breaker)
NEC — National Electrical Code
RLA — Rated Load Amps

*Fuse or HACR breaker.
†Minimum wire size is based on 60 C copper wire. If other than 60 C is used, determine size from NEC. Voltage drop of wire must be less than 2% of rated voltage.

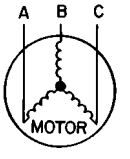
NOTES:

1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. The CSA units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

   % Voltage Imbalance

   $$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v

Maximum deviation is 7 v.
Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

OPERATING SEQUENCE

HEATING

On a call for heating, terminal ‘‘W’’ of the thermostat is energized, starting the induced-draft motor. When the hall-effect sensor on the induced-draft motor senses that it has reached the required speed, the burner sequence begins. This sequence is performed by the integrated gas control board (IGC). The indoor-fan motor is energized 45 seconds after flame is established. When the thermostat is satisfied and ‘‘W’’ is deenergized, the indoor-fan motor stops after a 45-second time-off delay.

COOLING

With the room thermostat SYSTEM switch in the COOL position and the FAN switch in the AUTO. position, the cooling sequence of operation is as follows:

When the room temperature rises to a point that is slightly above the cooling control setting of the thermostat, the thermostat completes the circuit between thermostat terminal R to terminals Y and G. These completed circuits through the thermostat connect contactor coil (C) (through unit wire Y) and blower relay coil (BR) (through unit wire G) across the 24-v secondary of transformer (TRAN).

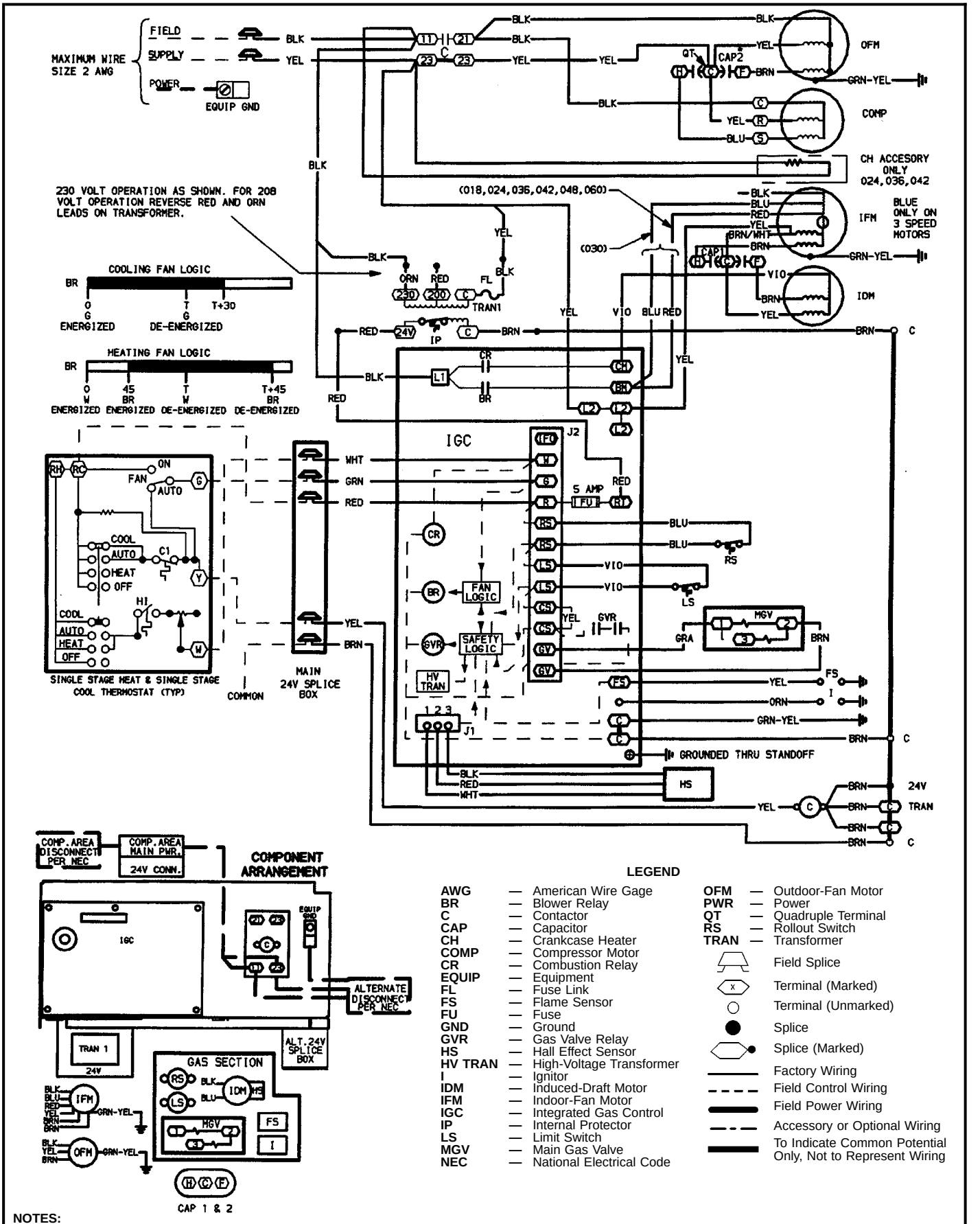
The normally-open contacts of energized contactor (C) close and complete the circuit through compressor motor (COMP) and condenser (outdoor) fan motor (OFM). Both motors start instantly.

The set of normally-open contacts of energized relay BR close and complete the circuit through evaporator blower (indoor) fan motor (IFM). The blower motor starts instantly.

NOTE: Once the compressor has started and then has stopped, it should not be started again until 5 minutes have elapsed.

The cooling cycle remains ‘‘on’’ until the room temperature drops to point that is slightly below the cooling control setting of the room thermostat. At this point, the thermostat ‘‘breaks’’ the circuit between thermostat terminal R to terminals Y and G. These open circuits deenergize contactor coil C and relay coil BR. The condenser and compressor motors stop. After a 30-second delay, the blower motor stops. The unit is in a ‘‘standby’’ condition, waiting for the next ‘‘call for cooling’’ from the room thermostat.

TYPICAL FIELD WIRING



LEGEND

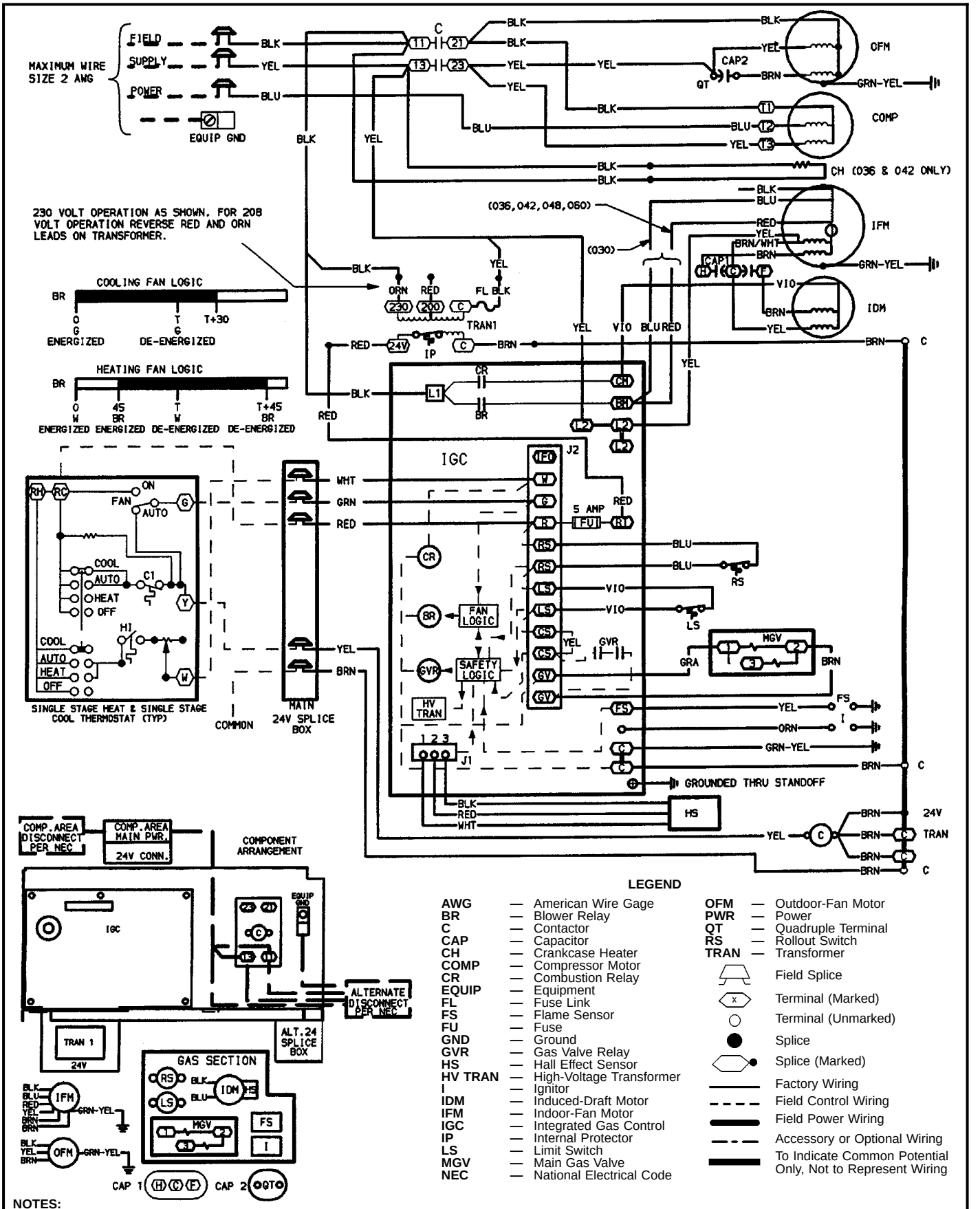
AWG	— American Wire Gage	
BR	— Blower Relay	
C	— Contactor	
CAP	— Capacitor	
CH	— Crankcase Heater	
COMP	— Compressor Motor	
CR	— Combustion Relay	
EQUIP	— Equipment	
FL	— Fuse Link	
FS	— Flame Sensor	
FU	— Fuse	
GND	— Ground	
GVR	— Gas Valve Relay	
HS	— Hall Effect Sensor	
HV TRAN	— High-Voltage Transformer	
I	— Ignitor	
IDM	— Induced-Draft Motor	
IFM	— Indoor-Fan Motor	
IGC	— Integrated Gas Control	
IP	— Internal Protector	
LS	— Limit Switch	
MGV	— Main Gas Valve	
NEC	— National Electrical Code	
OFM	— Outdoor-Fan Motor	
PWR	— Power	
QT	— Quadruple Terminal	
RS	— Rollout Switch	
TRAN	— Transformer	

Field Splice
Terminal (Marked)
Terminal (Unmarked)
Splice
Splice (Marked)
Factory Wiring
Field Control Wiring
Field Power Wiring
Accessory or Optional Wiring
To Indicate Common Potential Only, Not to Represent Wiring

NOTES:
1. If any of the original wire furnished must be replaced, it must be replaced with type 90 C wire or its equivalent.
2. Use copper conductors only.

208/230-1-60 Wiring Diagram, Units 588A018-060

TYPICAL FIELD WIRING (cont)



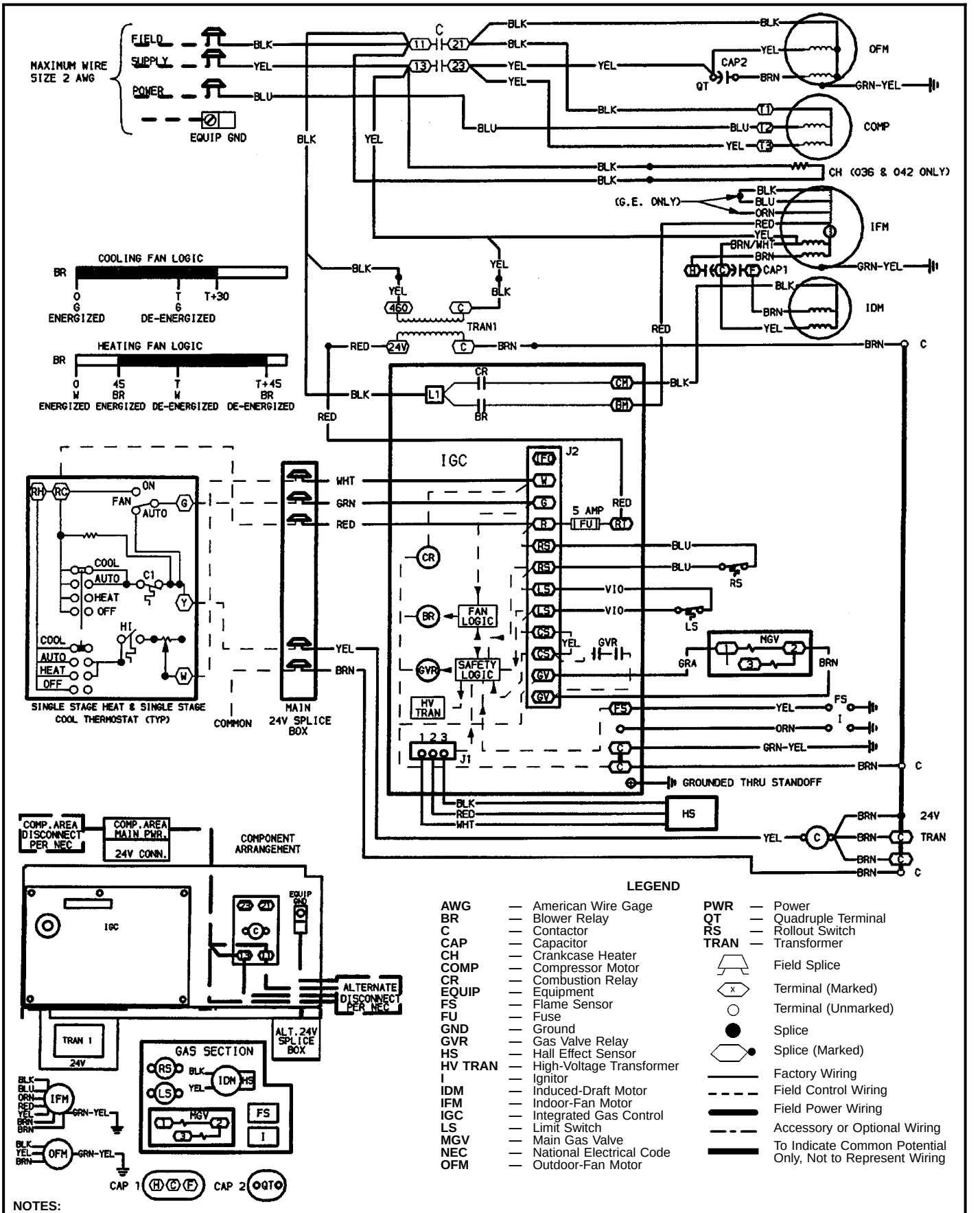
LEGEND

AWG	— American Wire Gage	
BR	— Blower Relay	
C	— Contactor	
CAP	— Capacitor	
CH	— Crankcase Heater	
COMP	— Compressor Motor	
CR	— Combustion Relay	
EQUIP	— Equipment	
FL	— Fuse Link	
FS	— Flame Sensor	
FU	— Fuse	
GND	— Ground	
GVR	— Gas Valve Relay	
HS	— Hall Effect Sensor	
HV TRAN	— High-Voltage Transformer	
I	— Ignitor	
IDM	— Induced-Draft Motor	
IFM	— Indoor-Fan Motor	
IGC	— Integrated Gas Control	
IP	— Internal Protector	
LS	— Limit Switch	
MGV	— Main Gas Valve	
NEC	— National Electrical Code	
OFM	— Outdoor-Fan Motor	
PWR	— Power	
QT	— Quadruple Terminal	
RS	— Rollout Switch	
TRAN	— Transformer	
		Field Splice
		Terminal (Marked)
		Terminal (Unmarked)
		Splice
		Splice (Marked)
		Factory Wiring
		Field Control Wiring
		Field Power Wiring
		Accessory or Optional Wiring
		To Indicate Common Potential Only, Not to Represent Wiring

NOTES:
1. If any of the original wire furnished must be replaced, it must be replaced with type 90 C wire or its equivalent.
2. Use copper conductors only.

208/230-3-60 Wiring Diagram, Units 588A030-060

TYPICAL FIELD WIRING (cont)



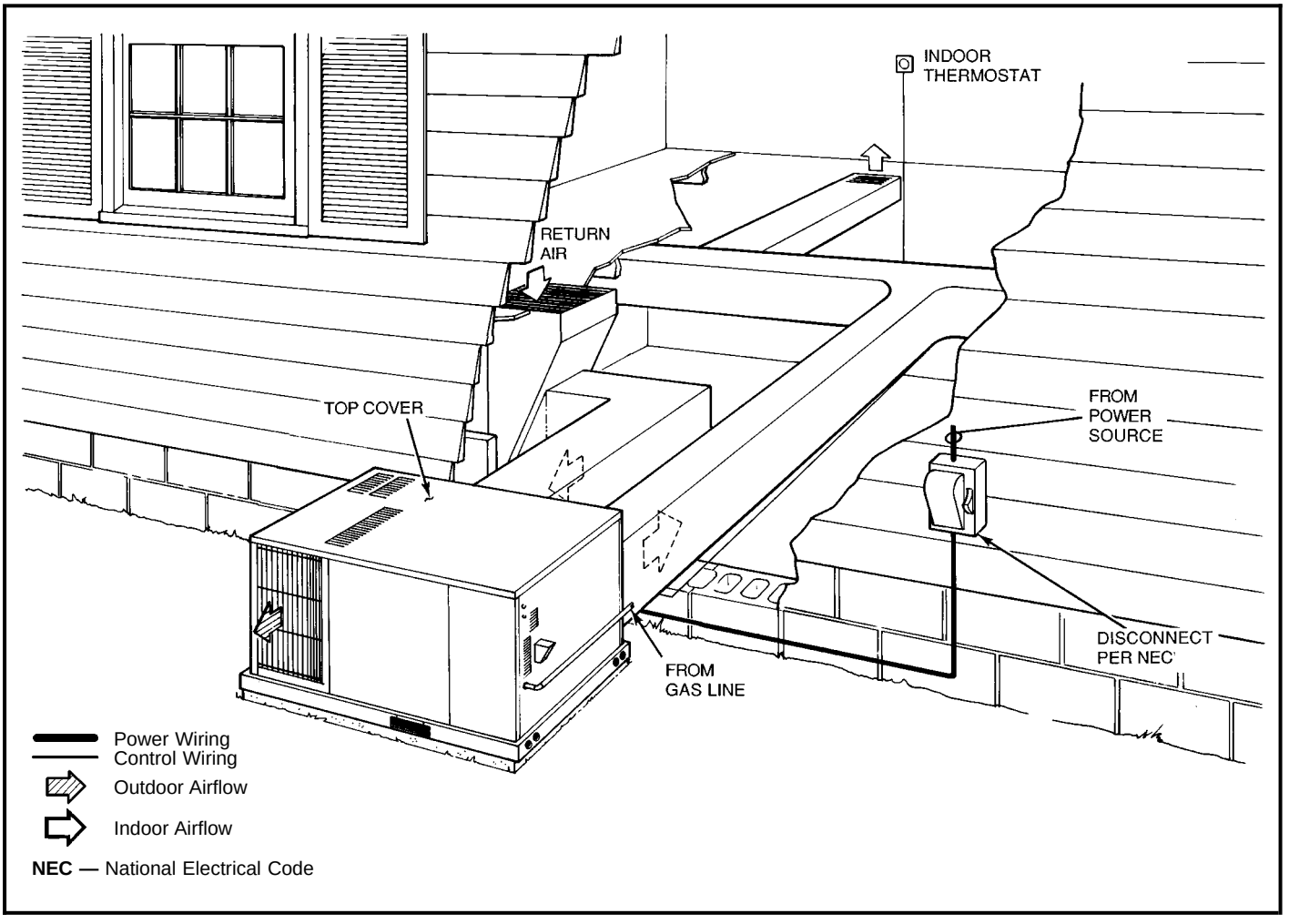
LEGEND

AWG	— American Wire Gage	
BR	— Blower Relay	
C	— Contactor	
CAP	— Capacitor	
CH	— Crankcase Heater	
COMP	— Compressor Motor	
CR	— Combustion Relay	
EQUIP	— Equipment	
FS	— Flame Sensor	
FU	— Fuse	
GND	— Ground	
GVR	— Gas Valve Relay	
HS	— Hall Effect Sensor	
HV TRAN	— High-Voltage Transformer	
I	— Ignitor	
IDM	— Induced-Draft Motor	
IFM	— Indoor-Fan Motor	
IGC	— Integrated Gas Control	
LS	— Limit Switch	
MGV	— Main Gas Valve	
NEC	— National Electrical Code	
OFM	— Outdoor-Fan Motor	
PWR	— Power	
QT	— Quadruple Terminal	
RS	— Rollout Switch	
TRAN	— Transformer	
		Field Splice
		Terminal (Marked)
		Terminal (Unmarked)
		Splice
		Splice (Marked)
		Factory Wiring
		Field Control Wiring
		Field Power Wiring
		Accessory or Optional Wiring
		To Indicate Common Potential Only, Not to Represent Wiring

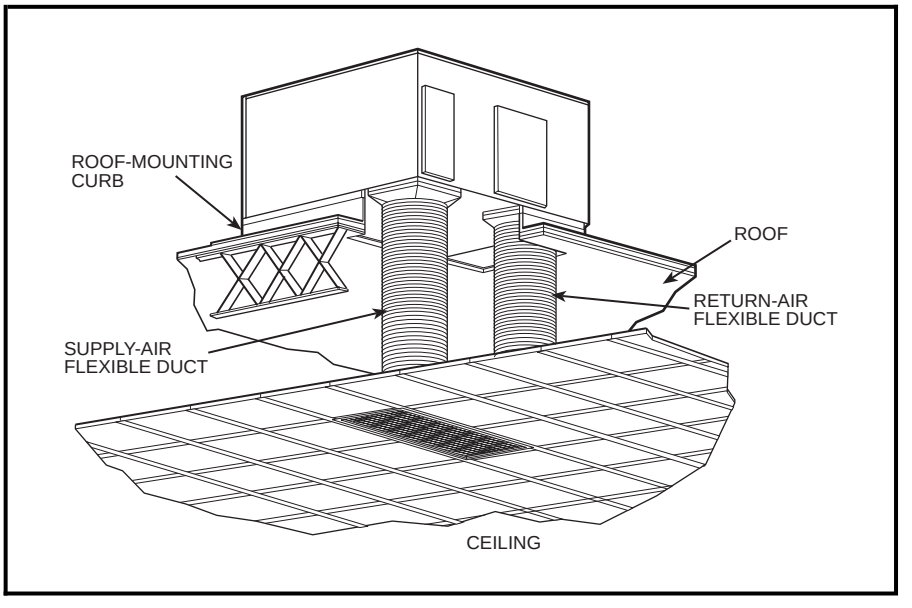
NOTES:
1. If any of the original wire furnished must be replaced, it must be replaced with type 90 C wire or its equivalent.
2. Use copper conductors only.

460-3-60 Wiring Diagram, Units 588A036-060

TYPICAL INSTALLATION



Horizontal Discharge



Downflow Discharge

APPLICATION DATA

1. **Condensate trap —** A 2-in. condensate trap must be field supplied.
2. **Ductwork —** Secure downflow discharge ductwork to roof curb. For horizontal discharge applications, attach ductwork to unit with flanges.

   Units are equipped with factory-installed duct covers on both the downflow and horizontal openings. Remove appropriate duct panel covers for intended discharge application. Units utilizing downflow option do not require duct panel cover removal.
3. **Airflow —** Units are draw-thru on cooling and blow-thru on heating.
4. **Maximum cooling airflow —** To minimize the possibility of condensate blow-off from evaporator, airflow through units should not exceed 450 cfm/ton.

   Minimum cooling airflow is 350 cfm/ton.

   Minimum ambient operating temperature in cooling for standard units is 40 F. With accessory low ambient temperature kit, units can operate at temperatures down to 0° F.

ENGINEERS' SPECIFICATION GUIDE

GENERAL: Furnish and install single-package, outdoor heating and cooling unit utilizing a rotary, reciprocating, or scroll hermetic compressor for cooling and gas combustion for heating duty. Unit shall discharge supply air either in downflow or horizontal application as shown on the contract drawings. Unit shall be capable of starting and running at 125 F ambient outdoor temperature per maximum load criteria of ARI Standard 210/240-89. Unit shall be provided with fan time-delay to prevent cold air delivery before heat exchanger warms up. Unit shall be provided with 30-second fan time-delay after the thermostat is satisfied.

Nominal unit electrical characteristics shall be _____ v, ____ ph, 60 Hz. The unit shall be capable of satisfactory operation within voltage limits of _____ to _____ v. All unit power wiring shall enter unit cabinet at a single location.

COOLING CAPACITY: Total cooling capacity of the unit shall be _____ Btuh or greater, and sensible capacity shall be _____ Btuh or greater at conditions of _____ cfm evaporator entering air of _____ F dry bulb, _____ F wet bulb, and condenser entering air of _____ F dry bulb. Total design conditions shall be a minimum of _____ Btuh/Watt. The unit shall be capable of cooling operation down to 40 F.

HEATING CAPACITY: Total heating capacity of the unit shall be _____ Btuh or greater with a gas input of _____ Btuh.

CABINET: The cabinet shall be constructed of heavy duty, phosphated, zinc-coated, prepainted steel capable of withstanding 500 hours in salt spray. Cabinet panels shall be easily removable for servicing. Unit shall be equipped with factory-supplied condensate drain connection for evaporator coil. Indoor (evaporator) blower compartment interior cabinet surfaces shall be insulated with a minimum ½-in. thick, flexible, cleanable insulation, coated on the air side. Aluminum foil-faced cleanable insulation shall be used to meet ASHRAE Standard no. 62.

COMPRESSOR: Compressor shall be welded, fully hermetic type with factory-installed vibration isolation. Compressor motor shall be of the refrigerant-cooled type with line break thermal and current overload protection. Rotary compressors shall be standard on unit size 018. Reciprocating compressors shall be standard on unit sizes 024-042. Scroll compressors shall be standard on unit sizes 048 and 060.

CONDENSER SECTION: The condenser coils shall have aluminum-plate fins mechanically bonded to seamless copper tubes with all joints brazed. Condenser fan wheel shall be dynamically balanced. Fan-motor bearings shall be sealed and permanently lubricated. Condenser-fan motor shall have inherent automatic-reset thermal overload protection and shall be totally enclosed.

EVAPORATOR SECTION: Evaporator coils shall have aluminum plate fins mechanically bonded to seamless copper tubes with all joints brazed. Evaporator fan shall be of the forward-curved, centrifugal, direct-driven type. Fan wheel shall be made from steel, be double-inlet type with forward curved blades with corrosion resistant finish and be dynamically balanced. Fan-motor bearings shall be sealed and permanently lubricated. Evaporator-fan motor shall have inherent automatic-reset thermal overload protection and shall be open drip-proof.

HEATING SECTION: The unit shall be equipped with an induced-draft combustion system with energy saving direct spark ignition system and redundant main gas valve. The heat exchanger shall be constructed of aluminized steel for corrosion resistance. Burners shall be of the inshot type constructed of aluminum coated steel. An integrated gas control board shall provide control of heating and simplify troubleshooting through its built-in diagnostics. All gas piping and electric supply can enter the unit cabinet at a single location.

REFRIGERANT SYSTEM: Refrigerant system shall include a fixed orifice metering device and liquid line strainer.

CONTROLS: Unit shall be complete with self-contained control system. Unit staging shall be minimum one-cool, one-heat. In the event of a power failure, unit control system shall sequence the unit to restart. Thermostat set points shall have adjustable deadband between heat and cool. Compressors shall be provided with inherent internal line break safety feature, and also overcurrent and overtemperature protection.

The Integrated Gas Control (IGC) shall provide timed control of indoor fan functioning and burner ignition. A light-emitting diode (LED) shall provide diagnostic information. The IGC board shall contain anti-short cycle protection for gas heat operation after 4 continuous cycles on high-temperature limit switch, and one cycle on the flame rollout switch.

AGENCY CERTIFICATIONS AND STANDARDS: The unit shall be UL listed and CSA certified for safety requirements. All wiring shall be in accordance with NEC. The unit shall be rated in accordance with ARI Standards 210/240-89 and 270. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

OPTIONS: Factory-installed options shall include: base rail and downflow application.

ACCESSORIES: Field-installed accessories shall include: flat roof curb (8, 11, or 14 in.), thermostat and subbase, low-ambient kit, natural-to-propane conversion kit, 25% open manual outdoor-air damper, filter rack, high- and low-pressure switches, compressor time delay, crankcase heater, lifting brackets, and high altitude kit.

Bryant
Air Conditioning

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

UNIT MUST BE INSTALLED IN ACCORDANCE
WITH INSTALLATION INSTRUCTIONS

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